INTERNATIONAL
LIBRARY

ANNUAL REPORT 1989–90

NSW Agriculture & Fisheries

Digitized by the Internet Archive
in 2025

https://archive.org/details/annual-report-nsw-agriculture_1989-1990

ANNUAL REPORT 1989–90

NSW Agriculture & Fisheries

NSW Agriculture & Fisheries

The Honourable
Ian Armstrong OBE MP
Minister for Agriculture & Rural Affairs
Parliament House
Macquarie Street
SYDNEY NSW

Sir

It is with pleasure I present the 1989-90 Annual Report for NSW Agriculture & Fisheries.

K P Sheridan
Director-General

Level 11, McKell Building, Rawson Place, Haymarket, Sydney
PO Box K220, Haymarket, NSW 2000, Australia Phone (02) 217 5366 Fax (02) 217 5484 Telex AA 72418

CONTENTS

CORPORATE SERVICES	Proposed Orange Headquarters **4** Year in Review **5** Corporate Charter **7** Organisation Structure **9** Access **10** Corporate Planning **11** Executive Officers **12**
PLANT INDUSTRIES	Natural Resources Management **14** Crop Protection **17** Rotation Management **19** Crop Production **22** Crop Improvement **27** Consumer Protection **30** Product Quality **32** Biological & Chemical Research Institute **33**
ANIMAL INDUSTRIES	Beef Cattle **38** Sheep & Wool **39** Goats **43** Dairy **44** Pigs **46** Poultry **47** Bees **48** Regulation **49** Residues in Livestock **50** Agricultural and Veterinary Chemicals **51** Natural Disaster Prevention & Relief **52** Vertebrate Pests **53** Animal Welfare **54** Artificial Breeding **54** Veterinary Laboratory Testing Service **55** Elizabeth Macarthur Agricultural Institute **56**
FISH INDUSTRIES	Reviews **60** Fisheries Regulation and Management **60** Fisheries Enforcement **63** Aquaculture **64** Oysters **64** Trout Hatcheries **65** Recreational Fishing **65** Habitat Management **66** Fisheries Research & Development **67**
SUPPORT SERVICES	Agsell **72** Rural & Resource Economics **73** Overseas Agricultural Development **79** Education **83** Communications **86** Legal Branch **89** Environment Protection **92** Human Resources **94** Computerised Information Service **99** Freedom of Information **100**
FINANCIAL REPORTS	Financial Management **102** Commercialisation **102** Major Assets **103** Disposal of Assets **103** Capital Works **104** Consultants **105** Financial Statements of Consolidated Funds and Special Deposit Accounts **107** Sources of Non-Consolidated Revenue **124** Farrar Memorial Trust **125** Agricultural Scientific Collections Trust **130**

Credits: The Editor gratefully acknowledges the cooperation and assistance received from all Divisions to compile this Annual Report. Coordinator Dave Harris, Executive Assistant; Concept & Design Nagui Henein; Typesetting Luis Sanchez; Photography Graham Johnson.

Division of Agricultural Services

ISSN 0156–255x

RRP $18.00

NSW Agriculture & Fisheries new Head Office being constructed in Orange's CBD. The relocation, to be completed by December 1991 will be the largest act of decentralisation by a Government Department in Australia's history.

THE YEAR IN REVIEW

1989–90 was indeed a significant year and one marked by a number of noteable events.

In particular, the Department celebrated its centenary of service after having come into existence on 28 February, 1890 as a sub-department of the Department of Mines.

Apart from attaining 100 years of proud service, 1989–90 saw the announcement of the relocation of NSW Agriculture & Fisheries' Head Office from Sydney to Orange and the official opening of the state of the art $35 million Elizabeth Macarthur Agricultural Institute on historic 'Camden Park' at Camden.

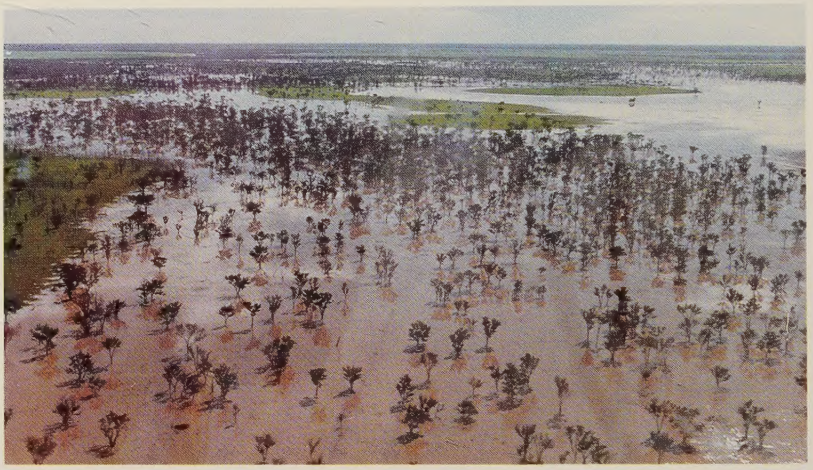
Premier Nick Greiner officially opening the Elizabeth Macarthur Agricultural Institute at Camden.

An annual performance assessment scheme for all staff was introduced including employment of senior executives on a contract basis.

A high profile, wholesale marketing outlet for NSW and Australian agricultural produce was opened by Agsell in Singapore and the Department's core agriculture and fishing business of productivity improvement was broadened to give greater emphasis to improved long term sustainability.

Although the year was satisfactory in terms of the overall performance of the agriculture and fishing industries, major difficulties were encountered from falls in wool prices and severe flooding.

The major thrust of the first corporate strategic plan for NSW Agriculture & Fisheries was to improve the efficiency, productivity and accountability of our own organisation. By far the most significant strategy to this end was the announcement on August 21 last year to relocate the Department's Head Office to Orange from 1 January, 1992. This transfer of almost 500 positions is the largest act of decentralisation by a single Government Department in Australia's history. It will achieve rental economies of over $17 million in its first ten years, create greater promotional opportunities for the 85 per cent of staff that are country based and bring our executive into closer, more direct contact with our primary clients.



The Bogan river in full flood last May. Departmental staff organised the aerial dropping of 56 000 bales of relief hay to stranded stock.

NSW Agriculture & Fisheries will be long term lessees of a new ultra modern office complex being especially constructed in the Orange CBD by the successful tenderer, Abigroup Ltd. The Department has received extensive advice on these matters from its development managers Baillieu Knight Frank, financial advisers Coopers & Lybrand, legal advisers Freehill Hollingdale & Page, and architects Edwards Madigan Torzillo Briggs Pty Ltd.

Activities to commemorate our centenary included a highly successful "Agview" educational exhibition at Camden Park, issue of centenary service medals to all staff, presentation of special centennial plaques to members of the rural community who had been outstanding long term cooperators and supporters, and the staging of a special, prize winning display at the 1990 Sydney Royal Easter Show. Other centenary activities included publication of a special edition of the NSW Agricultural Gazette and a book tracing the history of the Department's achievements since last century.

Agsell's incorporation of Agsell Australia Pty Ltd in order to establish a major wholesale shop front in Singapore last May was a major corporate initiative to improve the marketing of NSW agricultural and fishing produce. This outlet has potential exposure to over 10 000 registered buyers for international supermarkets and retail outlets. Another achievement featuring improved production technology based on changing market requirements was the establishment of the Department's feedlot advisory unit to coordinate services for the growing beef export market.

Yet another significant corporate plan initiative was the appointment of Dr Don Saville in June this year as Director in charge of coordinating the Department's drive to improve the sustainability and long term viability of our agricultural industries. This program, which includes strategies to combat soil salinity, soil acidity, erosion and other damage to our natural productive resources, will receive increased emphasis over the next decade.

Top: Minister Armstrong inspects Agsell's Wholesale Shopfront in Singapore for NSW agricultural produce.

Bottom left: Dr K. P. Sheridan (Director–General), Dr Yong Nguyen and Tony Rumsay (Rumsay Seeds) sign commercial tomato seed contract. A direct commercialisation of research from Gosford Horticultural Research and Advisory Station.

Bottom right: Citrus grower Robert Kemp and his wife receive a centennial plaque at Parliament House from Minister Armstrong in recognition of cooperation and support to the Department.

Our departmental staff played a key role in relief operations for farmers affected by the disastrous floods received in the North West and Central West of the state in April–May and more recently in July–August this year. For their outstanding service our staff in Orana Region under the leadership of Mr Roger Southwood were awarded the Premier's Meritorious Service Award. These officers were responsible for organising the dropping by military aircraft of 56 000 bales of hay to over 250,000 head of livestock stranded on 141 properties by floodwaters.

Despite still earning NSW over $6000 million per year and contributing around 40 per cent to our nation's exports the agricultural and fishing industries are entering a period of increasing economic difficulty and adjustment. NSW Agriculture & Fisheries stands ready to meet this challenge.

The process of corporate strategic planning is being vigorously implemented at all levels of our organisation to ensure this end is met efficiently and effectively.

K. P. SHERIDAN
Director–General

CORPORATE CHARTER

MISSION

To benefit the community by maintaining and improving the State's agricultural and fishing industries in keeping with the need for long-term sustainability.

GOALS

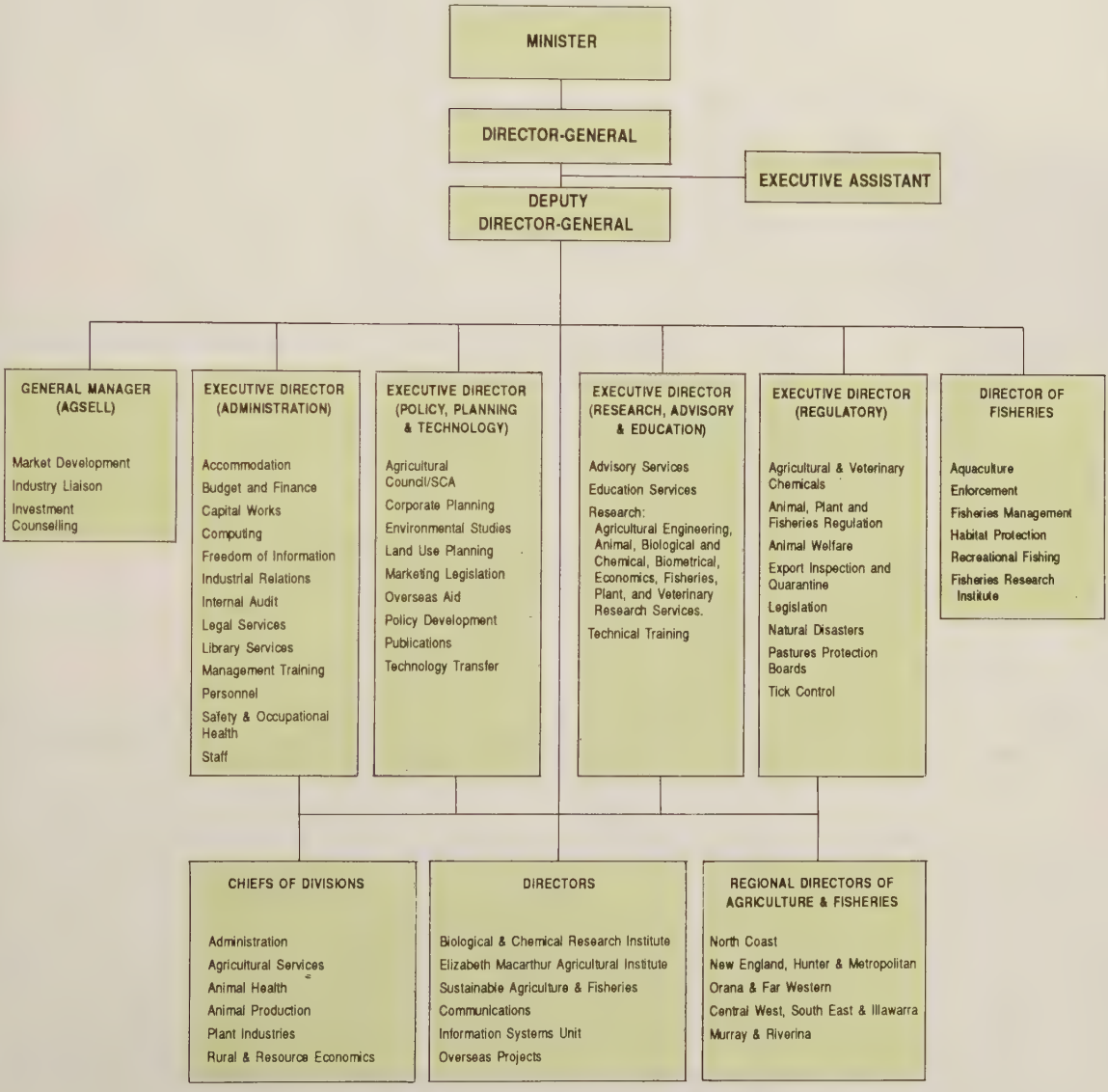
- To increase the productivity, profitability and sustainability of agricultural industries and fishing.
- To provide market oriented services to maximise opportunities for the development of competitive agricultural and fisheries enterprises.
- To protect agricultural and fishing resources and the environment generally.
- To manage fisheries resources and habitats to maintain their long-term viability for commercial and recreational uses.
- To protect the consumer and benefit the producer by ensuring the marketing of wholesome acceptable produce.
- To manage the Department's financial and human resources efficiently.

Left to right: R. A. Claxton, Director of Fisheries; P. J. Small, Executive Director (Administration); B. D. Buffier, Executive Director (Regulatory Services); D. A. Hayman, Executive Director (Policy, Planning and Technology); G. C. File, Executive Director (Research, Advisory and Education);

Seated left to right: G. R. Gregory, Deputy Director–General; K. P. Sheridan, Director–General; A. M. Smith, General Manager Agsell.

The Executive is discussing a model of NSW Agriculture & Fisheries' new Head Office being built in Orange.

ORGANISATION STRUCTURE

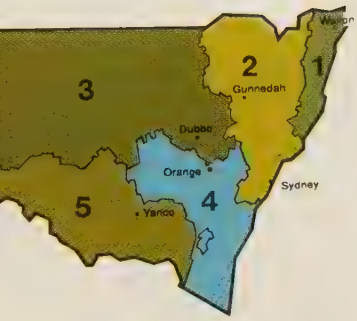


30 JUNE 1990

ACCESS

The Department's current principal place of business is the McKell Building, Rawson Place, Sydney, telephone (02) 217 6666, telex AA72418, Fax (02) 217 5484. However, on 21–8–89 the relocation of the Department's Head Office to Orange from 1–1–92 was announced after extensive planning.

NSW Agriculture & Fisheries' administration is regionalised, with each of five regions being managed from its headquarters by a Regional Director of Agriculture and Fisheries, located as follows:



REGION 1

NORTH COAST REGION

North Coast Agricultural Institute
Bruxner Highway
Wollongbar, NSW 2480
Telephone (066) 24 0200 Fax (066) 28 1744

REGION 2

NEW ENGLAND, HUNTER AND METROPOLITAN REGION

New South Wales Government Offices
35–37 Abbott Street
Gunnedah, NSW 2380
Telephone (067) 42 9240 Fax (067) 42 2940

REGION 3

ORANA AND FAR WESTERN REGION

New South Wales Government Offices
37 Carrington Avenue
Dubbo, NSW 2830
Telephone (068) 81 1270 Fax (068) 81 1295

REGION 4

CENTRAL WEST, SOUTH EAST AND ILLAWARRA REGION

New South Wales Government Offices
181–187 Anson Street
Orange, NSW 2800
Telephone (063) 63 8250 Fax (063) 63 8356

REGION 5

MURRAY AND RIVERINA REGION

Yanco Agricultural Institute
Yanco, NSW 2703
Telephone (069) 53 0211 Fax (069) 53 0357

ELIZABETH MACARTHUR AGRICULTURAL INSTITUTE

Woodbridge Road
Menangle, NSW 2568
Telephone (046) 29 3333 Fax (046) 29 3300

BIOLOGICAL & CHEMICAL RESEARCH INSTITUTE

Cnr Victoria Road and Pemberton Street
Rydalmere, NSW 2116
Telephone (02) 683 9777 Fax (02) 683 9714

Within the regions, and including metropolitan establishments that are outside the regional system, the Department has 143 public offices of one kind or another in 127 separate areas. (The difference between the two figures is explained by the presence of more than one departmental office in some locations.)

HOURS OF BUSINESS

Normal hours of business are 8:30 a.m. to 4:30 p.m., Monday to Friday, although, access to services is also available outside of those hours for emergencies.

CORPORATE PLANNING

The Department has updated its corporate strategic plans to carry it into the Nineties.The plans feature clearly defined goals, objectives and strategies, set realistic timetables and assign responsibility to individual officers at executive, divisional and regional levels. It emphasises the Department's important responsibility in sustainable agriculture and fisheries. This report focuses on progress achieved towards meeting our 1989–90 corporate objectives.

MANAGEMENT & STRUCTURE

The Department's structure comprises an executive group, production and service divisions, regions and specialist institutes.

THE EXECUTIVE

The Executive is responsible for the overall management of the Department, and for ensuring that government policy is efficiently implemented.

The line of command is from the Minister through the chief executive officer the Director–General, the Deputy Director–General and Executive Directors. The Executive constitutes a Board of Management responsible for determining policy. See the organisation chart on page 9.

DIVISIONS & SPECIAL SERVICE UNITS

The divisions may be divided into 'production' and 'service' divisions, each headed by a Chief. The production divisions are concerned with agricultural or fisheries technology and the provision of specialised technical services. They are the Divisions of Plant Industries, Animal Production, Animal Health and Fisheries. The divisons, which have a supportive role in departmental activities, include the Divisions of Agricultural Services, Rural and Resource Economics and Administration. Special service units include Agsell, Elizabeth Macarthur Agricultural Institute, and the Biological and Chemical Research Institute.

REGIONS

Each Region is under the control of a Regional Director of Agriculture and Fisheries, a position of equal status to a Chief of Division. The boundaries of the five agricultural regions are shown in the map on page 10.

EXECUTIVE OFFICERS

At 30 June 1990 the Department's principal officers were:

Minister for Agriculture and Rural Affairs
The Hon. I. A. Armstrong, OBE, MP

Director–General
K. P. Sheridan, BScAgr, MSc, PhD

Deputy Director–General
G. R. Gregory, BScAgr, RDOen

Executive Director (Regulatory Services)
B. D. Buffier, BRurSc(Hons), MEcon

Executive Director (Research, Advisory and Education)
G. C. File, HDA(Hons), BRurSc(Hons), MRurSc

Executive Director (Policy, Planning and Technology)
D. A. Hayman, BA (NZ), BCA (NZ)

Executive Director (Administration)
P. J. Small, Personnel Admin Cert

General Manager, Agsell
A. M. Smith, MScAgr, PhD

Director of Fisheries
R. A. Claxton, BScAgr

Executive Assistant
D. C. Harris, BEc(UNE), HDA, HDRE

Chief, Division of Animal Health
H. Scott-Orr, BVSc(Hons), DipBact (London), MACVS

Chief, Division of Animal Production
I. A. Coffey, BScAgr, DipAgExt, MPA

Chief, Division of Rural and Resource Economics
J. Booth, BAgrSc (Qld), BSc(Hons) (Griffith)

Chief, Division of Agricultural Services
P. A. Witschi, BScAgr

Chief, Division of Plant Industries
L. Cook, BAgrSc (Melb), PhD (UNE)

Chief, Division of Administration
K. F. Quince, BBus

Director, Sustainable Agriculture and Fisheries
D. G. Saville, BRuralSc, MSc, DipNuclearTech (AEC), PhD

Director, Communications
R. J. Dudley

Director, Elizabeth Macarthur Agricultural Institute
B. G. Baillie, HDA, HDRE

Director, Biological and Chemical Research Institute
M. Casimir, BScAgr(1st Class Hons)

Regional Director of Agriculture and Fisheries, North Coast Region
B. D. Scarsbrick, BA(Sc) (Macq), 4th yr AgrSc (Massey, NZ), HDA

Regional Director of Agriculture and Fisheries, New England, Hunter and Metropolitan Region
E. J. Corbin, BScAgr

Regional Director of Agriculture and Fisheries, Orana and Far West Region
O. R. Southwood, BScAgr

Regional Director of Agriculture and Fisheries, Central West, South East and Illawarra Region
D. J. McDonald, MScAgr, PhD (Texas A & M)

Regional Director of Agriculture and Fisheries, Murray and Riverina Region
D. E. Toohey, HDA, Grad Dip Extension

PLANT INDUSTRIES

The Division of Plant Industries is the largest of the Department's Divisions with responsibilities in horticulture, field crop and pasture agronomy, irrigation management, remote sensing and agricultural engineering. The Division administers relevant State legislation and acts as agent for the Commonwealth in the delivery of quarantine and export inspection services.

In keeping with the Department's corporate goals, the Division recognises seven major areas of technical responsibility. They are:

Natural Resources Management
Rotation Management
Crop Production
Crop Improvement
Crop Protection
Consumer Protection
Product Quality

NATURAL RESOURCES MANAGEMENT

The long term survival of agriculture depends on the preservation of the resource base, soil and water, while continuing to derive economic benefit through the production of food and fibre. The solution to many resource issues, such as soil salinisation and waterlogging, rests in joint activities with other organisations (SALT ACTION, TREES ON FARMS) and with landholders.

SOIL STRUCTURAL DEGRADATION

Soil pits are a useful means of detecting soil structural problems in agricultural land.

Research continued to quantify the effects of tillage treatment, stubble management and crop rotation on soil structure, fallowing efficiency and crop production under dryland conditions at Tamworth and Wagga Wagga. In the north, soil structure and fallowing efficiency were improved by 'no- till' management, but wheat grain yield and protein were usually decreased where stubble was retained, especially under no-till. Research is currently aimed at better understanding the nitrogen cycle in dryland wheat production. Research at Wagga Wagga showed that both lupin/wheat and sub clover/wheat rotations had higher grain yields and protein than continuous cropping with wheat.

At Walgett stable dryland farming systems in grey and brown clay soils are being developed. Continuous cropping and cultivation over many years have depleted soil organic matter levels and degraded soil structure, as well as reducing available phosphorus levels and increasing soil pH. Research there demonstrated improved soil fertility as a result of a pasture phase in the cropping cycle.

A field manual to help farmers manage clay soils for irrigated cotton production, called 'SOILpak', was published. to assist in diagnosing soil structure problems. Research commenced at Trangie and Narrabri to further the development of SOILpak for other soil types. In dryland cropping districts work focussed on the use of soil pits to increase the awareness of advisers and farmers of the importance of soil structure in crop production.

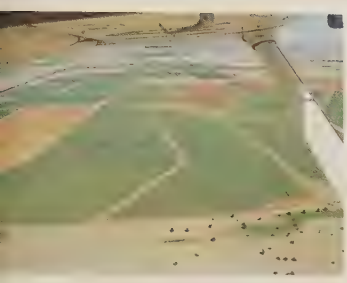
SOIL ACIDITY

Research on soil acidity, based at Wagga Wagga, comprises studies of the nutrition and adaptation of wheat and pastures on acid soils, and of the prediction of plant response to lime application. Lime is needed for wheat production in the south-eastern wheat belt but lime movement into acid subsoil is very limited. Subsoil acidity reduces grain production.

Field experiments on a range of soil types were conducted to study plant sensitivity to soil acidity and plant responses to liming. Some plant species and varieties were found to be tolerant of manganese, and sensitive to aluminium, others, vice versa.

Farmer surveys were conducted to ascertain the level of understanding of the acid soil problem and the extent of adoption of liming. These results are being used to plan the future direction of the advisory program.

IRRIGATION SALINITY



Proper farm design and Irrigation layout are an important element in the fight against salinity.

Hydrologic studies on clay loam soils at Deniliquin showed that the watertable remained static at a depth of 2 m under border check flood irrigation. The groundwater was highly saline, but economic yields of triticale and millet were obtained, showing that crop production can be sustained if the watertable remains at 2 m in these soils.

The relative salt tolerance of a range of annual clovers grown on waterlogged clay soils at Wakool was investigated and recommendations for salinity management for the main farming systems in southern irrigation areas developed for inclusion in a decision support system which is under development.

A highlight of the salinity program was the introduction of Watertable Watch, a community awareness project conducted in the Murray Valley in conjunction with the Murray Research and Extension Committee to demonstrate to the community the location of shallow watertables and how they respond to rainfall and irrigation. A wide range of activities, including school visits, media coverage, farm walks and the installation of 100 'easy-read' testwells, were conducted.

Three new advisory officers were appointed at Griffith, Deniliquin and Dareton as part of the SALT ACTION initiative to help with community education and technical advisory programs, particularly through the support of community groups. The Department's Salinity Project Team conducted two main activities, a meeting of research and advisory officers at Deniliquin to update staff on a wide range of salinity topics and an Irrigation Salinity Workshop where advisers learnt about the distribution and monitoring of shallow watertables and related problems.

FARM TREES

Strategically located trees assist in the fight against salt.

Thirteen field days and twelve seminars and farmer meetings on trees were conducted under the Interdepartmental Trees on Farms program. Segments on trees were included in numerous other agronomy and horticulture field days.

The inaugural Hunter Rural Tree Award attracted considerable interest from the coal mining industry, in addition to farmers. It raised the awareness of the value of trees, and recognised the achievements of successful tree planters.

One new title in the popular Farm Trees booklet series, *'Trees and Taxation'*, was published and Trees on Farms displays mounted at various shows and field days.

Woodlot demonstration plantings are being established on 33 properties in the Benerembah Irrigation District using funds provided under the Murray-Darling Basin Natural Resources Management Strategy (NRMS). Woodlots are located to intercept channel seepage and help lower watertables. Two other NRMS tree-planting projects are in the Berriquin Irrigation District and on the Agricultural Research and Advisory Station, Deniliquin. Planting of 10 demonstration farms in the Murray and Riverina Region was completed and field days will continue to be held on these properties.

IRRIGATION AND WATER USE EFFICIENCY

Water use efficiency continues to be a major program which figures significantly in the Irrigated Farm Competitions supported by the Department in southern NSW. Approximately 55 per cent of the State's irrigation production comes from the Murray and Murrumbidgee Valleys, from farms which, generally, have not had significant improvements in systems or practice since irrigation commenced. The Department encourages whole farm planning, landforming, drainage recycling, on-farm storage, shallow groundwater pumping and other technologies which contribute to efficient water usage, reduced watertable accession and reduced salinisation of irrigated soils.

With the launch of 'Irricom' computer software at Agview 90, the Department has available a state-of-the-art computer control system capable of interacting with weather and soil based data for control and scheduling of irrigation.

With the opening of the Murray Valley Research Station, irrigators can now see in place a majority of the types of bay outlets used in flood irrigation at one location.

Rice is a major irrigated crop in Southern NSW.

Macquarie Waterforce, a pilot program involving NSW Agriculture & Fisheries, the Department of Water Resources, the Irrigation Association of Australia and the irrigation industry generally increased public awareness of the dramatic improvement in crop production available from effective irrigation in the Macquarie Valley.

Trials using secondary treated sewage on bananas in the Coffs Harbour area were initiated. Effluent could provide most of a plantation's phosphorus needs, and some of the requirements for other elements.

Approximately 110 applications for financial assistance for irrigation systems, totalling over $5 million, were received from the Rural Assistance Agency. The Department's role is to evaluate the technical adequacy of the plans.

CROP PROTECTION

WEEDS

Pampas grass is a troublesome urban weed, especially in bushland.

Research into the biology and control of weeds was a strong feature of the Division's weed program during the year. Some examples of effective research included:

- establishment of suitable chemical control for blue heliotrope *(Heliotropium amplexicaule)*.
- conclusion of a four year program to develop a weed control strategy for chickpea.
- identification of the perennial grass, *Stipa neesiana* as a major threat to pastures on the highly productive basalt soils of the northern tablelands.
- commencement of a dial-up computerised system to provide farmers with advice on the influence of local weather conditions on the persistence of certain herbicides.
- evaluation of the cost of wild oats in wheat.
- research on the biology and control of a major developing weed of rice, *Alisma lanceolatum* alleviated fears of this weed becoming a major pest.
- trials were initiated on several important urban weeds, including wandering jew *(Tradescantia albiflora)*, pelitory *(Paritaria judaica)* and honey locust *(Gleditsia triacanthos)*.

Breeding and distribution of the biological control agent of Paterson's curse *(Echium plantagineum)*, the Echium leaf miner *(Dialectica scalariella)* was the main activity of the Biological Control Unit in 1989 and 1990. Several hundred thousand hectares of NSW are now affected by the insect, though its full impact is yet to be assessed.

The Unit continued to play a major role in the breeding and distribution of biological control agents of St John's wort *(Hypericum perforatum)*, salvinia *(Salvinia molesta)*, water hyacinth *(Eichhornia crassipes)*, paddy's lucerne *(Sida rhombifolia)*, and prickly pear *(Opuntia spp.)*. A biological control agent for bitou bush *(Chrysanthemoides monilifera)* was obtained for mass rearing and a feasibility study into possible biological control of Scotch broom *(Cytisus scoparius)* commenced.

The control of urban weeds received attention with a special campaign being conducted through local councils, nurseries and plant resellers. Thirty-five thousand leaflets listing the most important urban noxious weeds and their methods of control were produced and distributed.

A number of woody weeds are causing serious concern around the State. Blackberry *(Rubus fruticosa)*, lantana *(Lantana camara)*, groundsel bush *(Baccharis halimifolia)*, sweet briar *(Rosa rubiginosa)*, African boxthorn *(Lycium ferocissimum)* and Scotch broom are of particular concern on the tablelands and slopes while in the arid western areas, a number of undesirable native shrubs have also become a major threat to landholders. Chief amongst these is narrow leafed hopbush *(Dodonaea attenuata)*.

Internal training programs were conducted to better equip staff to advise landholders on the management of woody weeds. In the Western Division research into the control of woody weeds

using goats, herbicides and appropriate grazing and fire strategies has continued with major support from the Australian Wool Corporation. The Inter-departmental Woody Weeds Task Force collated and distributed information to landholders.

Drafting of a new Noxious Weeds Act was completed following consultation with the Shires and Local Government Association, NSW Farmers' Association and State Government departments.

Imported Stonefruit.

PLANT QUARANTINE

NSW Agriculture & Fisheries acts as agent to the Commonwealth in the provision of both agricultural quarantine and export inspection services.

The quarantine service is responsible for surveillance of all imported goods, including plant products, machinery and cars, imported postal articles and entry of passengers by air and by sea. In 1989–90, quarantine inspectors cleared 2 350 966 air and 47 949 sea passengers arriving from overseas into NSW on 16 895 flights and 61 vessels. Over 20 000 quarantine seizures were recorded and $4 419 217 collected in fees to offset the $6.6 million cost of the quarantine and export inspection service in NSW to the Commonwealth.

Inspectors cleared 262 146 inbound containers and 661 131 m^3 of timber. In addition they examined 37 508 parcels of which they seized 5917 for quarantine purposes.

Cargo automation for the clearance of airfreight was introduced in March 1990 and it is anticipated this system will be introduced for sea cargo in the future.

European house borer *(Hylotrupes bajulus)*, one of the world's most destructive pests of seasoned softwood timbers, was detected in a block of home units in Sydney. Surveys of over 300 houses within 500 m of the units revealed no further evidence of infestation and the units were fumigated in May 1990.

Imported Bananas.

EXPORT INSPECTION

Phytosanitary certification for a wide range of plants and plant products continued during 1989–90 with 11 003 certificates issued.

Agricultural inspectors commenced duty at NSW Grain Corporation's new bulk grain terminal at Port Kembla on 28 August 1989. The new terminal which replaced the old Glebe Island terminal features modern automatic sampling equipment and is capable of loading up to 50 000 t of bulk grain per hour. A total of 2 082 803 t of bulk wheat, 166 103 t of barley and 23 937 t of oats was passed for export through the Newcastle and Port Kembla terminals during the year.

TABLE 1

Interceptions of exotic insects and other organisms detected during quarantine inspections in NSW

Exotic insects and other organisms	*Number of interceptions*
Fruit flies (*Tephritidae*)	3
Giant African snail (*Achatina fulica*)	6
Other exotic snails and slugs	20
Bean thrip (*Caliothrips fasciatus*)	41
Navel orange worm (*Amyelois transitella*)	1
Woodwasps (*Siricidae*)	30
Stored product pests (*Trogoderma* sp.)	27
Citrus leaf miner (*Marmara* sp.)	5
Burnt pine longicorn (*Arhopalus tristis*)	2

ROTATION MANAGEMENT

It has long been known that rotational cropping practices can have important effects on the cropping environment. Legume pastures contribute both nitrogen and organic matter to the soil, increasing the profitability of both the cropping and grazing enterprises. Rotations are an important tool for managing many diseases, insects and weeds in crops and in the management of soil moisture. As the positive effects of rotations become better appreciated, so too does the need for the adoption of the correct selection and sequence of crops and pastures. In recent years the increased awareness of the advantages of rotations largely explains the growing interest in lupins, peas and other grain legumes as well as canola and other crops and pastures in rotation with winter cereals.

Some examples of the Department's activities in rotation management follow.

A concerted effort by agronomists to persuade more wheat growers to grow canola as a break crop in cereal rotations paid dividends for more and more farmers. Wheat crops grown after canola yielded 10 to 30 per cent more than wheat after wheat due to better disease control. Canola is also a profitable crop in its own right.

New soybean lines were identified which combine good yields with higher than average nitrogen fixing ability. They will be used in breeding higher yielding cultivars with high nitrogen fixing ability to reduce the dependence on nitrogenous fertilisers in cropping rotations.

Research over several years at Grafton has shown that cropping rotations based on no-tillage systems which involved soybeans and maize in summer and barley, annual ryegrass and grain legumes in winter resulted in more timely crop operations and fewer weeds, and proved much less destructive to the soil.

Pastures are an important component in rotations. At Walgett the technique for establishing perennial grasses such as native Mitchell grass was established to allow successful establishment

of this important species in a cultivated seed bed or aerially sown into wheat stubble soon after harvest.

On the heavy clay soils of the southern irrigation areas, research showed that pasture may be successfully sown by air into thinned rice stubble after harvest. Balansa and Persian clovers were more productive than Trikkala subterranean clover.

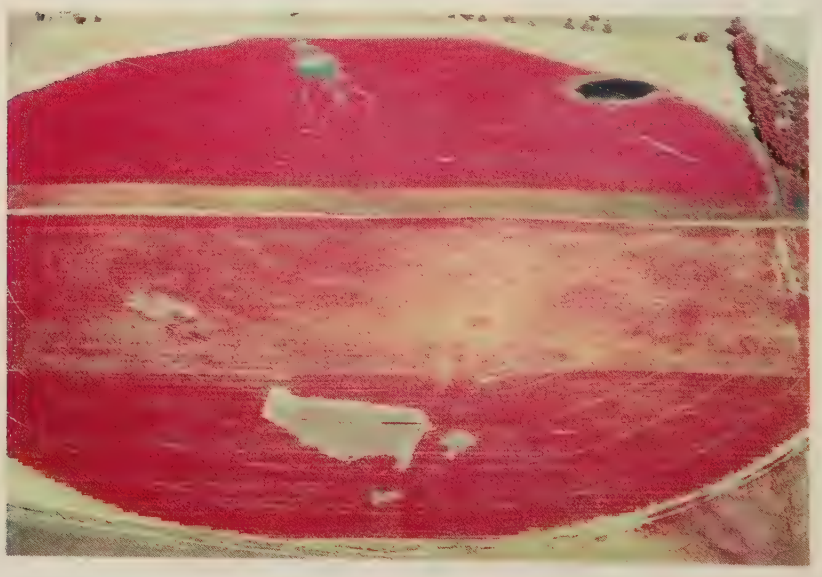
Annual grasses conservatively cost NSW farmers $50 million annually, through crop and pasture competition, grass seed injury to livestock and contamination of fleeces and pelts, and as alternative hosts of cereal diseases.

Research at Wagga Wagga and Orange established that a range of new options is now available for controlling annual weeds such as vulpia (*Vulpia* spp.), annual ryegrass (*Lolium rigidum*), brome grass (*Bromus* spp.) and barley grass (*Hordeum* spp.). 'Winter-cleaning' pastures in the year prior to cropping with selective herbicides provides excellent grass control. Alternatively, the inclusion of broad-leaved crops such as canola, field peas or lupins in the rotation also enables excellent control of grass weeds.

Such advances also create new problems, the most important of which is the advent of herbicide-resistant biotypes of annual ryegrass. Further research is planned to develop an approach to grass control which integrates the pasture and cropping phases of the rotation in a sustainable system.

REMOTE SENSING

Remote Sensing plays an important role in the Division's natural resources management program. It includes all technologies for measuring or monitoring agricultural activities from a distance. The Landsat satellite passes each point on the Earth's surface each 16 days and transmits a complex set of data to receiving stations around the world. NSW Agriculture & Fisheries is one of many government agencies which uses this information and maintains a small research effort to investigate ways in which it can be used to better manage the State's agricultural resources.



Centre Pivot Potatoes, Narrandera, showing value of infrared photo.

During the year the section mapped 3.2 million ha in western NSW for its agricultural suitability incurring both time and cost savings over the traditional methods of mapping.

The unit cooperated with other State agencies in monitoring the Western Division, a program which has been in operation for a number of years. The program was placed on a fully operational basis during the year.

SOIL MANAGEMENT

Two dryland soil management working groups were formed to coordinate soils advisory activities in central-western and south-western cropping regions. Both groups successfully used soil backhoe pits in activities for public and commercial soils advisers and for farmers. One such activity was a two day workshop for advisers in the Wagga Wagga district during which participants compared the effect of conventional cultivation and reduced tillage on the structural condition of several different soil types. Segments on soil pits were included in seven field days for farmers in the central-west and six in the south-west.

OPERATION QUALITY WHEAT

Operation Quality Wheat is an advisory project being implemented by NSW Agriculture & Fisheries, the Australian Wheat Board and the agricultural service industries. The operation aims to help wheat growers improve the profitability of cropping by lifting grain yields and improving grain quality. Improving the flow of technical information to the grower is fundamental to the project. Several information packages were developed and distributed. The object is to have farmers grow better crops and achieve high returns with minimum impact on the agricultural ecosystem.

The program, now in its third year, has increased nitrogen fertiliser usage on wheat by 20 per cent as growers realise the potential of nitrogen to boost yield and profitability. The number of growers 'winter cleaning' pastures to reduce the incidence of disease and grass weeds and lift soil fertility has increased significantly. The substitution of non-residual, knock down herbicides for cultivation as growers strive to prevent soil erosion, compaction and soil degradation and optimise sowing opportunity, is a developing trend statewide.

CROP PRODUCTION

Agriculture will continue to be a major income earner for NSW and the production of cereals, fibre, oilseed and industrial crops, fruit and vegetables can be expected to continue as a major component of the State's agricultural success. A feature of recent years has been the proliferation of crop types grown in the State. Land once sown exclusively to cereals, usually in association with pastures is now also commonly used to produce lupins, field peas and other grain legume crops, canola, safflower and other oilseeds. The range of crops produced by NSW fruit and vegetable growers is extensive with new species being added to the list annually. Asian vegetables are a recent example.

Some examples of the Department's activities in supporting the State's horticultural and field crop production are described below.

A group extension technique called Farmtech is being evaluated with **wheat** growers on a pilot basis. The focus of the program is higher farm profits through better management and adoption of known technology.

A statewide **oat** working party with wide industry representation was established to attend to the interests of the oat industry to improve liaison between industry, research and advisers; to establish and coordinate a core trial system for evaluating oat varieties and to develop a database for dual purpose cereal crops.

With increasing demand from industry, advisory and research for more detailed information on the interacting factors governing wheat varietal performance, the technical database, Wheat Base, continued to be reviewed and updated and information packages on water use efficiency, yield/protein interaction, and varietal performance released.

The 'Winter Cereals Management Guide 1990' was upgraded into a professional advisory publication with funds provided by the Wheat Research Committee for NSW. The booklet has become an indispensable guide for NSW cereal growers with the demand for copies increasing to 15 000 in 1990. The emphasis of the guide is towards total crop management technology and contains information drawn from the many research, advisory and industry based projects conducted in NSW.

Crop improvement programs conducted by district agronomists resulted in 98 per cent adoption statewide of recommended cereal varieties.

Agfacts on **faba beans** and **lupins** now join field peas in providing comprehensive technical information on the main winter grain legumes being grown in NSW.

Promotion of the moderately phomopsis resistant Gungurru lupins has resulted in its dominance in lupin sowings this year and hopefully will greatly reduce sheep losses from the disease lupinosis.

The continued good performance of the improved chickpea varieties including Amethyst, a NSW Agriculture & Fisheries' release, augers well for expanding chickpea production in NSW.

A survey of weeds and weed control problems affecting **cotton** growers marked the start of a new weeds research program at

Narrabri. Funded jointly by the Department and the Cotton Research Council, the survey of growers identified nutgrass (*Cyperus* sp.) as the weed most in need of research.

Other weeds which are spreading rapidly but as yet infest only small areas were identified as haloragis take all *(Haloragis glauca)* polymeria *(Polymeria langifolia)* take all and sesbania *(Sesbania cannibina)*.

As a result of the survey a research program to control nutgrass was initiated at Narrabri.

Divisional scientists at Narrabri and Grafton developed a new **soybean** cultivar for coastal areas. Called Dune, it is the first to have tolerance to weather damage of the seed when rain delays harvest. It is the only cultivar to combine weather tolerance with tolerance to the high levels of manganese in many coastal soils, while at the same time offering high yield potential.

The SOYCHECK crop management system was used on 84 soybean crops this year in central and southern NSW (and northern Victoria). A technical officer was appointed to work closely with growers and collect crop data. These data are creating a greater awareness among growers of the effects on crop yields of variations in plant population, insect control and nodulation. A technical officer has also been appointed to work in a similar way with canola growers using CANOLA CHECK, in 1990–91.

Attempts to market the **canola** cultivars Maluka and Shiralee in the European Community were frustrated. In spite of Shiralee being among the top yielders in European trials the cultivar is not uniform enough to be acceptable into the European Community's very strict plant variety rights scheme. It can therefore not be marketed in Europe. Ways of overcoming this hurdle with future cultivars are being studied.

The Department played a major role in organising a workshop to set research priorities for the **tea tree oil** industry, in conjunction with the Australian Tea Tree Industry Association and the Australian Special Rural Research Council. Following the workshop a joint research and development program was established with funding to begin in 1990–91.

Tea tree is a valuable new crop for the North Coast.

The continuous fluctuation in oil concentration in the leaf is the major issue currently being studied. While the fluctuations appear to be related to soil and atmospheric moisture levels scientists were surprised to find no leaf or oil yield response to irrigation in trials conducted near Lismore during the dry spring in 1989.

It appears that, in deep soils with no restrictions, tea tree develops a deep rooting habit which can carry it through dry periods without the need for irrigation.

A survey of the botanical composition of improved **pastures** in central NSW revealed that the legume content of pastures, especially in the higher rainfall areas, was less than satisfactory for animal production. Perennial species were found in areas where the annual rainfall was 600 mm but only exceeded the proportion of annual species when the rainfall exceeded 800 mm for legumes and 900 mm for grasses or at altitudes above about 900 m. A high proportion of annual species was attibuted to continuous grazing practice. Subterranean clover was the most common legume and annual grasses were found throughout the survey area. Pasture recommendations will improve to account for climatic limits to production and persistence.

A pasture and animal assessment project with 11 sites throughout the State has developed the awareness and skills of advisory officers and managers in the assessment of pasture characteristics critical to animal performance. Data on the performance of pastures and livestock under set stocking over a range of pasture type and environments will be used in the GRAZFEED computer model to calculate feed requirements.

A new technique for efficiently and rapidly measuring demographic responses in extensive grazing systems was developed at Broken Hill. The system known as VIVA is a computer based video imaging system for plotting permanent quadrants and recording plant demographic data. This is an important development in research to help understand the impact of extensive grazing practices in the rangelands of Australia.

Research on the north-west slopes produced a management package based on subterranean clover, fertiliser and grazing management. This is a significant achievement towards the sustainable agriculture goal of the Department.

Maize breeding has been a successful program at the Grafton Research & Advisory Station.

HORTICULTURE

For many years the Department has conducted a breeding/selection program for strawberries at the Somersby section of Gosford Horticultural Research and Advisory Station. As a result the South African variety Selekta was included in the NSW and Victorian Certification Schemes. Two Gosford selections originating from overseas breeding programs have been named Somerlong and Somerlate and have now been assigned to the Victorian Certified Runner Growers Cooperative for commercialisation.

The Department's long-standing low-chill stone fruit evaluation program conducted on two grower properties at Arcadia and Bangalow has continued and has resulted in the naming of a new nectarine variety Sunbob. This variety was introduced from the University of Florida's breeding program and was named in recognition of the efforts of Arcadia orchardist Bob Patten.

Citrus is a major horticultural industry conducted in three separate NSW climatic zones (Coastal, MIA and Murray Valley). The Department maintains research stations in each locality. Current NSW citrus production research was highlighted at the 1989–90 Tri State Field Day (organised in conjunction with Victoria and SA) at the Dareton Agricultural Research and Advisory Station. Programs include integrated control of spined citrus bug, crop regulation, salinity, water scheduling, time of harvest, container production and high density management. Emphasis is on reducing pesticide use and costs while increasing productivity and fruit quality.

In a project on citrus irrigation and management systems, commenced at the Agricultural Institute, Yanco in 1986 the

economic potential of Valencia oranges on two rootstocks with planting densities of 666-5000 trees per hectare and variable irrigation schedules were compared. During this establishment period developmental work to provide the irrigation treatment control for this project resulted in the Department entering into a joint partnership commercial venture to market and further develop IRRICOM, a computer based irrigation management software package. The public launch of this product was made at Agview 90 and it represents the latest in computer controlled irrigation scheduling after years of research and testing.

Modern technology takes the guesswork out of irrigation.

A program to overcome production problems associated with nematodes in grape vines, including a series of field days, interstate tours and demonstrations was continued. Four MIA trials demonstrated the advantages of rootstocks and information on long term Departmental rootstock trials, rootstock propagation and rootstock establishment was provided to growers at each site. It is estimated that 40 percent of replanted vineyards in the MIA is now made with rootstocks propagated to varieties in demand. In the Lower Murray districts the use of rootstocks in replanting situations is also significant and the sale of nematode resistant rootstock cuttings has increased significantly.

Good irrigation practice is beneficial in maximising yield, lessening the adverse affects of salinity and economising on the use of water. A new program named 'Water Watch' was commenced in the Lower Murray to assist grape growers improve their water management.

Water Watch promotes the use of regularly publicised evapotranspiration figures and the on-site use of tensiometers as guides for both irrigation timing and the volume of water to be applied. Response to the work has been very good and the number of cooperators is expected to increase significantly.

Irrigation scheduling work in the Mudgee district is being formulated using the neutron probe. This project has improved yields from around 6 to 25 tonnes per hectare by maintaining soil at field capacity up to late December and increasing bud numbers per vine. Variations in trickle irrigation design for vineyards are also being monitored.

ORGANIC FARMING

Organic farming is the production of food and fibre without the addition of artificial chemicals.

An officer was appointed to raise the awareness of organic farming within the Department; increase the knowledge and skills of staff, provide resources to existing and potential organic farmers and compile information on organic farming.

Work with Federal and State authorities, consumer and conventional farmer groups as well as the organic farming industry is assisting in the development of national standards for the certification of organic farms and their produce.

Assistance was given to the industry to establish an association of organic produce wholesalers and retailers. This includes the provision of information to traders so they can provide a better customer service.

ORNAMENTALS

Work continued to increase grower knowledge of pests and diseases and safe control methods. Blood tests to monitor grower exposure to pesticides were conducted again this year. Of more than 500 tests done during the last five years only 10 growers required counselling about the safety of their spraying procedures. Emphasis has also been placed on efficient spray application methods.

A major program to improve the quality of cutflowers was completed. A manual on postharvest treatments for growers was

finalised and information on selection and care of cutflowers provided for consumers at the Royal Easter Show and at Agview, the Department's centenary display.

Prospective, new and established cutflower growers have been provided with detailed information packages enabling them to source supplies, marketing contacts, and economic information.

A program for improvement in nursery production techniques was begun with a series of seminars on disease suppressive potting mixes.

A discussion group was established to coordinate growers, advisers and researchers interested in Christmas Bells, (*Blandfordia* spp.). The main purpose of the group is to encourage the orderly development of an export and domestic industry.

The Garden Advisory Service answered 22 000 inquiries from the public. A series of recorded messages about common garden problems was installed.

Officers answered garden questions from the public at Agview 90 and contributed to community events including a Focus on Ageing Week information day in Parramatta, and Spring in the Gardens at the Royal Botanic Gardens.

More Information Sheets for the public were produced including *How to Plant Trees and Shrubs, Bamboo in the Garden and Plants for Seaside Gardens.*

CROP IMPROVEMENT

Registered Cereal seed carries an assurance of quality.

Genetic improvement of crop, pasture and ornamental plants has long been a major function of the Department. Major plant breeding initiatives exist for the major crops wheat, rice, barley, maize, oats, soybean and canola, and Divisional staff participate in breeding and improvement programs for many other field crops including lupins and field peas. The national chickpea breeding program and the national white clover breeding program are centred in NSW. Lucerne and native Australian grasses are also under active plant improvement research. In the horticultural area there is a strong varietal evaluation effort with considerable work contributing to the selection and introduction of improved planting material for a wide range of crops. A highlight of this program is the work on native plants at Gosford.

The provision of horticultural budwood and the major thrust in the certification of crop and pasture seed contribute to the Department's crop improvement program.

NEW AND IMPROVED VARIETIES

Many breeding programs launched new varieties in 1989–90. These are listed in the Table 2. In addition regional and district evaluation programs were conducted.

Grain sorghum and sunflower are two crops for which the Department does not have breeding programs, but which were studied as part of the Department-wide crop improvement program in 1989–90. This work demonstrated differences of 40 per cent yield ability between different commercially available grain sorghum varieties, a result of considerable interest to farmers!

Seed production officers checking purity of sub clover seedlings.

SEED PRODUCTION

Following staffing problems the Seeds Section is again at full strength and to match the increasing technical complexity of seed production a new training program was implemented for departmental officers involved in certification.

The first significant quantities of commercial certified seed of the recently released Serradella cultivars, Elgara and Avila, was produced in 1989–90 and preparations commenced to seed-increase promising new lines of subterranean clover from the national program.

HORTICULTURAL BUDWOOD SCHEMES

NSW has responsibility to the Fruit Variety Foundation committee (FVF) to establish, maintain and re-index for virus diseases all accepted citrus cultivars. Currently the field repository at Dareton consists of 30 cultivars, but following the introduction by NSW through plant quarantine, after a 25 year embargo, all 10 new cultivars released to date were nominated into FVF and will be the future source of budwood.

The citrus budwood and rootstock seed schemes continued successfully with all the available material being supplied through the NSW Horticultural Propagation Cooperative Society Limited as the department's distribution agents.

For the first time the Society also offered for sale to NSW registered nurserymen, new cultivars of 'elite' health status. This budwood is in very limited supply and must be rapidly multiplied by nurserymen to produce commercial trees for sale in the shortest possible time.

PASTURES AND FIELD CROPS

Three new subterranean clovers developed in the National Subterranean Clover Improvement Program were jointly recommended for registration in the Herbage Plant Register. These varieties are mid to late maturing and have superior disease resistance and persistence compared with the existing cultivars in this maturity range.

The Research Centre for the National White Clover Improvement Program at Glen Innes commenced to characterise 550 lines of white clover from local and overseas sources. Research has identified the important breeding criteria for future use.

The newly released canola cultivar, Eureka, developed by the Department's scientists at Wagga, was grown commercially for the first time and made up over 70 per cent of the crop area. Its high yield capacity, as well as a favourable season, gave growers their highest yields ever. A further two cultivars, Barossa and Yickadee, were released from Wagga during the year and will be available to growers next year. These cultivars represent further improvements in seed and oil yields. Domestic and overseas marketing rights for Barossa and Yickadee were granted to a NSW seed company in a commercial agreement and in return the Department will receive royalites on seed sales.

TABLE 2

Species for which Plant Improvement Programs exist in NSW Agriculture & Fisheries

Crop	*Program*	*Varieties Released 1989-90*
Wheat	Major breeding program	Lark
Oats	" " "	Yarran
Barley	" " "	
Rice	" " "	
Maize	" " "	GH5019W
Canola	" " "	Barossa, Yickadee
Soybean	" " "	Dune
Chickpea	" " "	Barwon
Jojoba	Joint breeding program	Barindji, Waradji
Field pea	Participant national crop	
Lupin	improvement program	
Cowpea	Minor improvement program	
Mungbean	" " "	
Pigeon pea	" " "	
Cotton	Cooperation with CSIRO breeding program	
Pasture species		
Lucerne	Joint breeding program	
Annual medic	Participate in national program	
Subterranean Clover	" " "	
White clover	Major breeding program	
Serradella	Participate in national program	
Native grasses	Major program of genetic improvement and adaptation of *Danthonia* and other native grasses.	
Horticulture		
Ornamental native flowering plants	Major breeding program— Geraldton wax, Leschenaultia, Kangaroo paw.	Fantail flamingo, Fantail starburst, Fantail ultraviolet, Firefly.
Ornamental native foliage plants	Selection and adaptation research.	
Grapevines	Clonal improvement.	
Citrus	Selection and improvement, major budwood scheme.	
Stone fruit	Selection from imported lines.	
Nectarine	Evaluation of Florida, low chill lines.	Sunbob
Strawberry	Evaluation.	Summerlong, Summerlate,
Tomatoes	Breeding program.	Firefox, Red Centre
Sub-tropical fruits		
Macadamias	Seedling selection.	
Lychee	Seedling assessment.	
Coffee	Varietal evaluation.	

The productivity of the horticultural industries depends on the quality of planting material.

CONSUMER PROTECTION

Agricultural Inspectors administer a range of State Acts to protect NSW consumers of agricultural products from misrepresentation and to ensure that they have access to products which conform to known quality standards. Uniform grade standards now exist for a wide range of fruit and vegetables.

The administration of these standards is assisted by the introduction of objective maturity testing procedures.

In protecting growers from plant disease, over 10 000 visits were made to NSW orchards, and nearly 22 000 visits to home gardens. Home gardens are an important source of disease and insect pests to commercial orchards.

In administering the uniform grade standards under the Plant Diseases Act, Agricultural Inspectors issued 2748 detention notices at markets for over 334 000 packages as indicated in Table 3, and 3411 castaway certificates to prevent substandard fruit and vegetables from reaching consumers. Twenty-four prosecutions were successfully completed.

During the year 2312 nurseries and a further 2405 resellers were inspected in accordance with the Horticultural Stock and Nurseries Act.

Special campaigns were conducted in respect of the following pests:

Queensland fruit fly. The extensive outbreak in the Murrumbidgee Irrigation Area in January 1989 was successfully eradicated by a thorough baiting and trapping program, funded by a grant of $557 000 from the Department during the autumn and spring of 1989. As at 24 April 1990 the MIA was declared 'fruit fly free' and 12 month, 80 km radius freedom certification was possible, thus allowing entry to some interstate and overseas markets without treatment.

Warehouse beetle. This grain and stored product pest was found to be well-established throughout the rice production areas of the MIA and south-west NSW and in some grain stores in the central and north-west of the State. A major hygiene and pest control program adopted in March-April 1990 saw most premises attain reasonable control.

Citrus leaf miner. This pest was originally confined to the central and north coast of the State but in recent years it has spread south and west. In 1989 it was found in an MIA nursery while in autumn 1990 it was found in orchard trees at Corbie Hill near Leeton.

Boil smut of maize. This has spread from north coastal NSW and has now been detected in crops south to Maitland and also at Tamworth and Inverell. Major seed production areas in the south and central-west of the State remain free of this disease. Under the Plant Diseases Act seed producers are required to treat and label seed to indicate the risk of disease infection.

Bunchy top of bananas. This disease remains confined to the Tweed and Brunswick districts of far northern NSW. A total of 4815 banana plants were found infected during the year as compared with 6002 plants in the previous year.

TABLE 3

Packages detained at markets for non-compliance

Produce	*Quantity Packages*	*Bulk bins*
Apples	14 409	33
Pears	12 579	4
Citrus fruits	22 302	74
Stone fruits	633	–
Grapes	6 367	–
Bananas	64 610	–
Avocados	4 667	–
Mangoes	8 514	–
Kiwifruit	5 712	–
Rockmelon	1 647	–
Tomatoes	23 035	–
Potatoes	131 444	–
Onions	19 252	–
Pumpkin	1 437	84
Carrots	5 712	–
Lettuce	5 283	–
Other fruits and vegetables	6 606	–
Total	**334 209**	**195**

Summer Pride Export Oranges.

PRODUCT QUALITY

The productivity of NSW agriculture depends not only on the gross volume of produce harvested, but most importantly on its quality. Nowhere in the plant industries is this more important than in the horticultural crops where relatively short lived fruits and vegetables can lose value as a result of poor handling and storage techniques. Product quality in horticulture determines shelf life, the appearance and eating quality of produce. Quality management commences with on-farm management, continues through the grading and packing process, and again through storage, transport and in-store presentation.

Some highlights of the program for 1989–90 included:

- the acceptance by Japanese quarantine authorities of NSW research data for quarantine treatment of Granny Smith apples for Queensland fruit fly and codling moth, and lemons (Queensland fruit fly).
- the publication of the book *Postharvest Diseases of Horticultural Produce, Vol. I, Temperate Fruit.*
- the upgrading of product quality literature to support fruit producers interested in improving their market performance.
- the organisation of the Australian Conference on Postharvest Horticulture.
- the presentation of specialist postharvest workshops for industry.
- supporting AQIS in the introduction of their Approval Quality Assurance Scheme.
- a program to improve the juicing quality of NSW oranges.
- the development of a hot dip treatment for oranges which reduces the extent of chilling injury in produce being treated for the Japanese market.
- advisory meetings to improve postharvest handling of citrus.
- implementation of objective maturity testing procedures for a range of fruits.
- research to determine the reason for perceived poorer shelf life in NSW bananas relative to Queensland fruit.
- research to reduce blemish in bananas.
- identification of Ca and Bo as probable contributors to poor internal fruit quality in custard apples.
- re-evaluation of maturity standards for avocado.

Griffith Export to Japan.

BIOLOGICAL & CHEMICAL RESEARCH INSTITUTE, Rydalmere

SOIL MANAGEMENT

Soil structural decline is one of the most expensive and widespread forms of land degradation in NSW. A soil management system known as 'SOILpak' is being developed at Narrabri and Trangie to provide management options to growers of irrigated cotton on cracking clay soils. SOILpak has been designed to maximise profitability and ensure the long term sustainability of cotton farming systems. The SOILpak program will be developed for other soil types and cropping systems.

Regrowth around an isolated tree protected from sheep.

TREES ON FARMS

Research continued on the relationship between insect damage and tree decline on the Northern Tablelands. Seasonal conditions favoured tree establishment and regeneration and tree condition has generally improved, but stands of *Eucalyptus stellulata* (Black Sallee) are still declining due to insect attack. The prolonged wet period (April to July) which caused extensive waterlogging of pastures, favoured the development of bacterial and fungal pathogens which decimated scarab larval populations. With a general acceptance that dieback is a cyclical phenomenon, emphasis is now being placed on regeneration.

WEEDS

Advisory. Herbicide persistence. 'Herbicide Adviser', a dial up computer system has been developed to provide on-line advice about the influence of weather conditions on the persistence of the herbicides atrazine and chlorsulfuron commonly used in minimum tillage farming. The system is linked to recommendations on recropping as well as indicating herbicide reliability and safety. It allows predictions to be made retrospectively or, prospectively i.e. for extended forecasts beyond the present crop. This will greatly improve the management of weed populations, and minimise the use of expensive herbicides.

FIBRES & OILS

Cotton. The insecticide resistance management strategy for cotton bollworm, *Helicoverpa (Heliothis) armigera*, has been operating for seven seasons. Following high levels of pyrethroid resistance at the end of last season, the pyrethroid use period in cotton was shortened from six to five weeks, finishing on 3rd February as opposed to the 10th. For other crops the strategy remained the same. Monitoring of resistance showed that while this decision reduced the build-up of pyrethroid resistance, the greater use of endosulfan caused an increase in resistance to this insecticide.

Canola. Canola and other winter crops are susceptible to severe damage from red legged earth mite and blue oat mite during early growth. Trials conducted at Yanco identified endosulfan as

an effective bare earth treatment for earth mites providing seedling protection for up to five weeks despite rainfall of 25–75 mm. This is a substantial improvement on previous treatments.

GRAIN PRODUCTION

Crop Improvement. The new *Septoria* resistant wheat variety, Lark, released during the year is the first NSW Agriculture & Fisheries main season wheat to offer *Septoria* resistance. The variety also offers resistance to other important foliar diseases including stem, leaf and stripe rust.

Advisory. Field crop seed pathology. A three year survey of seed from all winter grain legume crops showed insignificant levels of fungal infection carried on the seed. However, seed from some crops, such as lupins, contained significant infections by Cucumber Mosaic Virus. This will need to be controlled genetically in the host plant.

PASTURES

Research on the population dynamics of wingless grasshopper continued. The outbreak on the Southern and Central Western Slopes persisted during the 1989–90 season and localised infestations on the Southern and Central Tablelands continued to intensify. On the western slopes the impact of the outbreak on grazing and horticultural industries was alleviated by good pastoral conditions during spring. High rainfall during February 1990 stimulated nematode parasitism of grasshoppers which caused the collapse of populations in all affected districts during March 1990. However, the collapse came after peak egg laying and will not reduce the size of the hatching next spring.

FRUIT

Citrus. Citrus leaf miner and Chinese wax scale were recorded in inland citrus orchards for the first time during 1989. Widespread heavy infestations of citrus leaf miner also occurred on the coast, including home gardens and nurseries in Sydney. Research at BCRI to establish biological control is now underway, including the possible introduction of biological control agents

Parasitic wasp laying eggs on eggs of spined citrus bug.

for citrus leaf miner from China and Thailand. Spined citrus bug is an increasing pest of inland citrus. Research on its biology and ecology has led to the formulation of a management strategy based on biological control. Augmentation and conservation of

a native parasitic wasp which destroys the eggs, provides effective biological control of spring and early summer populations. This can be enhanced by physical or chemical removal of bugs in overwintering congregations.

Viticulture. Five species of borer that are attacking grapevines in the Hunter Valley were identified. Only one, fig longicorn, is causing economic damage and threatening the long-term viability of vines in the Pokolbin area. Research is directed at determining the distribution and behaviour of fig longicorn and establishing an effective management program.

Deciduous fruits. Heat therapy has been used successfully to eliminate virus infections from propagation stocks of Rons and Supreme cherry varieties. Virus indexing after treatment has not so far found any infections in either variety. However, the indexing has yet to be completed.

Assessing results of European red mite resistance testing.

Crop protection. Monitoring showed that resistance to the important miticides, clofentezine and hexythiazox, in European red mite is now widespread in NSW apple orchards. Apple growers' interest in integrated mite control (IMC) based on predators and strategic use of miticides has increased dramatically with the onset of resistance to most available miticides and consumer demand for reduced pesticide residues in produce. Research to support IMC was continued including trials to determine the compatibility of potential new miticides with predatory mites. Another important initiative was the establishment of a commercial mite monitoring service at Orange. The service, subsidised in its first two years by the Horticultural Research and Development Corporation, is expected to be commercially viable in the third year.

Bananas. Samples of banana weevil borer from 36 plantations were tested for resistance to the currently used insecticides. Resistant weevils were found on 17 of these properties, but at a low frequency, and control failures in the field have not yet been reported. However, failures in Queensland due to resistance indicate problems may be imminent in NSW. Research into parasitic nematodes as an alternative control measure continues. Four strains of superior infectivity were selected by laboratory bioassay of 32 strains of nematodes and these will be evaluated in the field.

VEGETABLES

Mushrooms. BCRI plant pathologists have achieved a major innovation in producing mushroom compost, in cooperation with a commercial compost maker. A patent application has been made for the process which is quicker than conventional composting and removes odour problems. A FIRST award to help develop the process has also been applied for.

REGULATORY PROGRAMS

Fertilisers. A simplified and uniform Fertilizer Act to be adopted by all States is being drawn up following a meeting of the Working Party on Fertiliser Quality Control held in Adelaide in February 1990. Some highlights of the agreement include, a uniform

approach to naming fertilisers, control over claims and false advertising, uniform labelling and registration procedures, uniform quality standards, and the right to request scientific proof from manufacturers that their product provides the benefits claimed.

QUARANTINE

Plant protection. The DNA fingerprinting method developed at BCRI for rapid identification of bacterial pathogens is an invaluable tool for quarantine protection for fruit and vegetable crops. A patent application has been made by the Department for the method which can be used to help prevent the spread of exotic diseases and, to prepare disease management programs. This has made the bacterial identification programs at BCRI better than any elsewhere in the world.

European wasp. The commercial pest control industry is now heavily involved in control, but Rydalmere staff investigated 888 reports of European wasp activity which posed a risk to public health. This resulted in the destruction of 529 nests in the Sydney metropolitan and surrounding areas.

Argentine ant. The total area infested with Argentine ant increased by over 200% during the past 12 months with the discovery of major infestations in Wollongong and Birchgrove. The Wollongong infestation covers almost 200 hectares and is less than 1 km from the Port Kembla grain handling terminal. There are now 13 infested sites in Sydney and the South Coast covering almost 330 hectares.

INFORMATION SYSTEMS

The BCRI database has been loaded with 12 000 reports incorporating 20 500 plants, 22 600 soils and 4200 waters. The data have been transferred from an Apple/Corvus LAN into a database on an IBM compatible 486i PC. Chemical analysis, site and agronomic parameters will be available by inquiry.

STAFF & PERSONNEL SERVICES

Awards. Three senior members of the Plant Pathology Branch at BCRI received important awards during the year:

Principal Research Scientist, Mrs P. Barkley, received the Public Service Medal, in recognition of her work for the citrus growing industry.

On his retirement, **Special Plant Pathologist, Mr A. Bertus,** received the Award of Merit from the Flower Growers Association, for his research and advisory support to the industry.

Senior Plant Pathologist, Dr P. Fahy, who invented Conquer, a biological control agent of mushroom blotch, was cited in The 1990 Food Industry Innovation Award by the Australian Institute of Food Science and Technology to Mauri Foods which developed the product commercially.

ANIMAL INDUSTRIES

The Divisions of Animal Health and Production provide advisory, diagnostic, regulatory and research services to a wide range of clients involved in NSW livestock production.

These services promote efficient and sustainable production systems to ensure high quality and healthy products are available to consumers.

BEEF CATTLE

FEEDLOT ADVISORY UNIT

The Unit was established by NSW Agriculture & Fisheries with representatives from NSW Departments of Planning and Water Resources, NSW State Pollution Control Commission, NSW Soil Conservation Service, NSW Local Government and Shires Associations, Australian Lotfeeders Association and the NSW Farmer's Association.

The Unit instigated the development of the 'State Environmental Plan Policy No. 30; Cattle Feedlots', which provides a uniform standard for approval of feedlot developments in NSW. More recently the Premier has advised that NSW Agriculture & Fisheries will have an overall coordinating role of Government agencies involved in feedlot industry.

A system of Planning Focus meetings was introduced prior to the preparation of Environmental Impact Statements.

A Feedlot Manual was produced containing information about feedlot development applications, requirements of Government agencies, environmental issues and technical information on management and welfare issues.

Regional seminars on the requirements and benefits of feedlot development have been conducted for Shire councillors and their staff.

Assistance has been provided to six overseas investors who are considering large scale lotfeeding developments.

HEALTH

Genetic Diseases. Developments in molecular biology have led to methods of detecting animals carrying defective genes for a number of inherited fatal diseases. A cooperative testing program for detection of mannosidosis carriers in Murray Grey cattle was concluded during the year. Fifteen thousand cattle were tested and owners were encouraged to cull carriers from their herds.

Arbovirus Monitoring Program. The seasonal incidence of bluetongue, akabane, ephemeral fever and palyam was established through sentinel herds comprising highly susceptible young cattle. Testing during the 1988–89 season indicated extensive bluetongue infection in the Lower North Coast, the Hunter and South Coast regions and an unprecedented level of bluetongue transmission. However, the clinical disease was not observed in stock.

Monitoring during the 1989–90 season is still to be completed but preliminary results indicate a reduced level of bluetongue virus transmission this year. In contrast, significant akabane transmission has been observed and some stock losses are likely. Early warnings are being issued to producers.

Brucellosis and Tuberculosis Eradication. Abattoir monitoring for brucellosis has continued with approximately 500 000 samples tested during the year. The very small number of positives found at abattoirs have been subjected to intense follow-up. However no cases were confirmed.

During the year there were two outbreaks of tuberculosis detected by abattoir monitoring. All cattle in these two herds

were slaughtered with full market value compensation. Testing of neighbouring herds was undertaken with no further cases being detected.

Cattle Ticks. An outbreak of cattle ticks and tick fever occurred at Yeoval in central western NSW in April 1989. 66 properties were quarantined as a result of this outbreak. In April 1990 all properties had their final inspections and were released.

In the Tick Quarantine Area (TQA) only two cattle tick infestations occurred—both in the Legume area. This is the third year of extremely low level infestation despite very favourable climatic conditions for the tick.

BREEDPLAN

Herds enrolled in BREEDPLAN increased to 1300 (including two from Japan and several from New Zealand) with 500 in NSW, an increase of 35% on 1988–89.

GRAFTON CROSS BREEDING RESEARCH

A major field day in October 1989 presented the latest results of this research, that has achieved profitability gains of 12 to 17% for beef producers. Cross breeding has developed at an increasing rate in NSW particularly in response to information on its economic benefits generated from the Grafton program.

CATTLE APPRAISAL SCHOOLS

The 'Angus judging schools' held at the CB Alexander Agricultural College, 'Tocal', Paterson have continued to have a major impact, teaching cattle managers to critically assess live animals for breeding potential and the important economic traits of weight for age, carcase yield and quality.

CHILLER ASSESSMENT SCHEME

The Department and the NSW Meat Industry Authority encouraged and supported AUS-MEAT in the development of an Australian carcase grading system.

SHEEP AND WOOL

GENETIC IMPROVEMENT

The management and operation of the Fleece Measurement Service (FMS) changed to cope with the rapid growth in demand for fleece testing. A management committee has been established with full industry representation. Substantial progress was made toward making the service self-funding.

Nine major Merino studs are cooperating in on-stud programs that field test the application of breeding research and technology. A study of the repeatability of performance tests on young rams has shown significant improvement can be made by combining information from a number of tests at different ages. An advanced breeding service prototype has also been established.

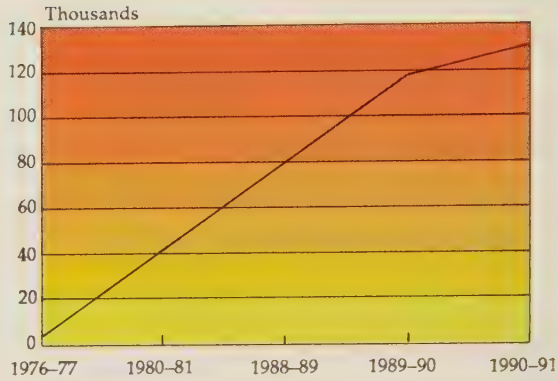
Computer software (the first of its kind in Australia) was developed for the effective analysis of sire reference test results.

Guidelines for wether comparisons were produced and distributed (including interstate) to provide standardisation and

FMS DEMAND

fleece sample tests

Year	Samples tested
1976–77	3 000
1980–81	41 000
1988–89	79 000
1989–90	118 000
1990–91	130 000 (estimated)



allow comparison between different sites. Computer software has been developed and preliminary results produced, giving an objective measure of the characteristics of various bloodlines.

The crossing of Merino bloodlines in a research project at Trangie shows more potential for hybrid vigour associated with lamb survival than other characters such as fleece weight. This has important implications for the use of outside sires and the management of sire reference schemes.

Meaty Lean Lamb. The Meatsheep Testing Service (MTS) received Australia-wide acknowledgment as the basis for the national performance recording scheme, **LAMBPLAN**. In NSW the service currently tests over 90 per cent of stud sires sold and over 60% of flock rams.

MTS THROUGHPUT

sheep tested

Year	No. tested
1980–81	1 412
1983–84	13 640
1986–87	16 276
1989–90	20 000

Australian Meat & Lifestock Research & Development Corporation (AMLRDC) funds have been obtained for projects to develop eye muscle area measurements using ultrasound and to extend LAMBPLAN's coverage of dual purpose and maternal sheep breeds.

A 'Production and Marketing of Meatier Lean Lamb' booklet was produced as well as a series of display boards and a video. The program has received written endorsement from all industry organisations. Over 6 000 booklets have been distributed throughout Australia to lamb producers and processors.

Sheep Breed Development. The remainder of the Glen Vale flock, a breed developed by the Department were sold.

Initial commercial evaluations of the Department's Hyfer breed indicated out of season breeding ability with a 25–45 per cent advantage over Border Leicester/Merino ewes in both spring and eight monthly joining systems.

MANAGEMENT

Ovine Footrot. The NSW Footrot Strategic Plan gathered considerable momentum during 1989–90. Increased incidence of the disease has created a much greater awareness of the need for the footrot control program.

There are now 85 footrot control groups established. 2231 graziers controlling 4.3 million sheep are affiliated with these groups which have an average farmer membership of 25 and average sheep population of 53 000.

A directory of sheep handling units was compiled and distributed and information sheets produced on footbaths and footbathing.

The appointment of Footrot Advisory Officers by 10 Rural Lands Protection Boards (RLPBs) (previously Pasture Protection Boards) has provided more expertise in the field.

The declaration of Footrot Protected Areas, the regulatory part of the Footrot Strategic Plan, included the whole of the Western Division (excluding Broken Hill, Walgett and Brewarrina) and the districts of Bathurst, Condobolin and Moulamein. There are now 29 full districts and 3 part districts or 56 per cent of RLPBs in the State declared Footrot Protected Areas.

Blowfly and Flystrike. The 'Flywise' flystrike prevention program was initiated. It combines cost effective prevention techniques and responsible use of insecticides. A survey of producers indicated 80 per cent support for such a program.

An evaluation of jetting techniques has led to a large increase in the use of modified jetting handpieces and considerable change in the use of automatic jetting races.

This modified jetting handpiece provides more effective application of insecticide, less wastage and increased throughput.

Field kits are available to producers to help monitor field performance of the various insecticides.

Handling Facilities. A technical resource package was put together and included publications, videos, a directory of sheep handlers and information on sheep yards and shearing sheds.

There was high demand for the videos (including interstate) and a series of very successful workshops were held for both producers and manufacturers.

Sustainable Grazing. 37 pasture paddocks are being monitored involving 11 sites across NSW as part of a major AWC funded project. Pasture quality analysis procedures have now been established along with a computer data base of information. This provides the basis for more efficient and sustainable utilisation of pasture.

Considerable assistance was provided in the development of the Grazplan and Sheepo computer packages which rely heavily on the pasture skills and performance information developed by the monitoring exercises.

Producers involved in discussions at a pasture monitoring site.

Effective Supplementary Feeding. Research has provided a better understanding of supplementary feeding technology, particularly the role of protein. The recent widespread use of lupins in rations indicates that updated recommendations are being adopted.

Reproductive Performance. Recommendations for pregnant ewe management have been updated integrating pasture monitoring technology and better knowledge of critical nutrition/body condition requirements for ewes during pregnancy, lactation and joining. Producers are involved in field testing the concepts.

Internal Parasites. The Wormkill and Drenchplan strategies, promoted by the Department, are continuing to be well received in the New England and central/southern areas of NSW with a greater than 90 per cent adoption rate.

Lice. The Licekill Program is continuing to receive support from graziers with over 5000 inquiries received in the last year. Graziers are now attending field days and actively seeking advice on lice control in flocks.

Surveys indicate that the number of properties with lice infestation fell from 25 per cent at the start of the program to a current level of 16 per cent.

The program is placing increasing emphasis on correct dipping techniques with plunge and shower dips where the pyrethroid and organophosphate insecticides are still effective. Attention is being paid to dip hygiene, correct operating pressures and time of exposure in the dip.

Laboratory procedures were developed to determine the degree of lice resistance to pyrethroids. This is used to screen new chemicals and monitor field resistance.

Ovine Brucellosis Accredited Free Flock Scheme. The number of accredited sheep flocks has increased over the last 12 months from 1169 to 1208. This number represents approximately 75 per cent of all registered sheep studs.

GOATS

Packaged Information on Goats. A very comprehensive range of information on goats has been produced. This includes 'The Goat Manual', a video production on the cashmere industry and display boards on weed control.

Goat Meat Production and Marketing. AMLRDC funds were obtained to refine production systems and develop objective meat marketing methods. A meat industry data base was established in conjunction with the NSW Meat Industry Authority (MIA) to provide intelligence on production and marketing trends. AUSMEAT were provided with recommendations for changes to the goat meat language.

Pasture Management. An integrated package on the use of goats for pasture management and weed control was produced.

A major Australian Wool Corporation (AWC) funded project using goats for scrub control/pasture improvement at Cobar shows goats are having a desirable impact by defoliating extensive areas of shrub and improving visibility. Under the right conditions, pasture growth and availability for sheep will improve when grazing with goats.

These goats in the grazing trial at Cobar are having a significant impact on woody weeds making way for better sheep pastures.

Clip Preparation. Assistance was provided in the development of a national core syllabus for TAFE cashmere clip preparation courses and to the training of TAFE staff. Assistance was also provided at a series of producer workshops around the State.

Breeding. Programs have been developed for breeding workshops for both cashmere and angora goats. Pilot exercises have been conducted for selected cashmere and mohair breeders.

Four mohair wether comparisons were completed, analysed and the results distributed. A second cashmere wether comparison commenced and genetic links established with goats on the contributors properties.

Preliminary results from unique cashmere selection lines show realised heritabilities and correlations agree closely with original estimates and provide the basis for the determination of breeding values.

Recent work on the 'buck effect' has resulted in improved natural synchronisation in does and improved ovulation rates.

Parasite Control. Strategic drenching programs for goats have continued to be monitored, especially in high rainfall areas and coastal regions where anthelmintic resistance and rapid reinfestation of goats by worms are major problems.

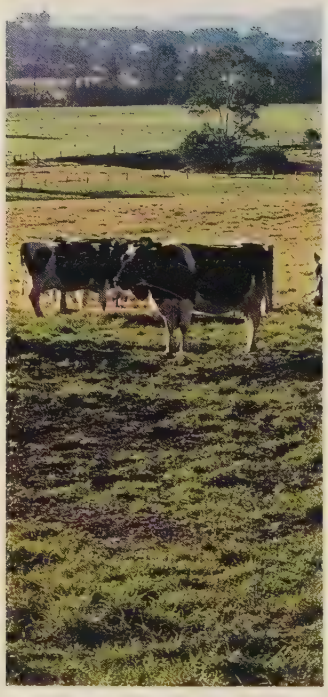
Footrot. The NSW Footrot Strategic Plan aims to reduce the incidence of footrot in goats as well as sheep. Eradication methods used for sheep have been extended to goat owners.

DAIRY

CONSOLIDATION OF ADVISORY AND RESEARCH RESOURCES

An additional livestock research officer was appointed to Wollongbar by redeployment of an advisory position, to more adequately reflect its significance as the centre of excellence for Departmental dairy research.

Sale of Bega Dairy Demonstration Farm. Arrangements for the sale of the farm were concluded. The milk quota will be transfered to other Departmental dairy institutions. The computerised 'cattle code' identification, feeding and management system was transfered to the Elizabeth Macarthur Agricultural Institute (EMAI).



INDUSTRY FUNDING

The Dairy Research and Development Corporation approved funding for the construction of a dam and installation of irrigation at Wollongbar. Other major approved projects include research on a high quality legume to fill the autumn feed-gap and a combined project with the University of Western Sydney to study ways of improving the adoption of new technology by farmers.

Health. The pestivirus research project continued to receive funding from the Dairy Research Council. Progress was achieved in investigating the effects of the virus on reproduction and in the development of more sensitive diagnostic tests.

The recently developed ELISA test for pestivirus antibody is now used routinely for diagnostic and research investigations at EMAI and has also been adopted as standard practice by other Australian laboratories.

DAIRY HERD IMPROVEMENT

This scheme is now self funding. During the year 84 215 cows were tested in 864 herds. Average production for cows completing test was 4670 L milk, 183 kg fat, and 157 kg protein.

Developments included the provision of a monthly production index based on protein yield for each cow recorded, inclusion of individual cow somatic cell counts, and the ranking of cows for combined yield of fat and protein.

The industry was provided with information on Australian Breeding Values for milking speed, temperament, conformation, and the economics of feeding different levels of supplements to cows of different genetic merit. The impact of alternate methods

of rearing heifers, herd mating programs and alternative breeding strategies were studied.

The following table notes the significant difference in production obtained in the Wollongbar genetic lines of Holstein cattle under similar feeding.

TABLE 1

Genetic			300 Day Production		
Line	*No. of Cows*	*EGV* (kg)*	*Milk (kg)*	*Fat (kg)*	*Fat (%)*
High	31	+19	4200	166	3.95
Zero	8	+ 2	4110	146	3.55
Low	14	–21	3314	118	3.57
Difference High vs Low (%)			27	41	11

** Estimated genetic value for fat based on 0.5 Sire's ABV + 0.5 Dam's ABV.*

These cows were grazed predominantly on kikuyu based subtropical pastures and their actual production levels are somewhat lower than if they grazed temperate pastures such as ryegrass. These results demonstrate that the Average Breeding Value (ABV) system is a reliable indicator of performance.

QUOTAS

The Department accepted responsibility for the education of dairy farmers on the new flexible quota scheme which will become operational in July 1990. Two workshops were held, an educational package developed and farmer meetings organised to explain the scheme.

Advisory programs demonstrated the economic benefits of using silage as a component of dairy cattle diets.

DAIRY SHEDS

The 'Autosketch' computer package for the development of plans for dairy sheds will be offered on a fee for service basis and will greatly enhance the design of dairy sheds for improved milking efficiency.

MASTITIS

the State Bulk Milk Cell Count (BMCC) dropped from 493 000 cells per mL of milk in August 1989 to 407 000 cells per mL in March 1990. This represents more than $200 000 of additional milk production during March 1990 compared to August 1989 due to better mastitis control.

Seven seminars on 'Mastitis—Diagnosis and Control' were organised for Departmental officers and private veterinary practitioners. Follow up seminars for dairy farmers also contributed significantly to the reduction in mastitis levels.

The BMCC competition run by the Department in conjunction with Beecham Veterinary Products has provided an incentive to farmers to reduce individual herd cell count.

PIGS

Boar Performance Test Station, Tocal. 404 boars were entered by 35 pig breeders for testing, with boar performance continuing to improve with increased daily growth rates and reduction in backfat.

During the year sales of Tocal tested boars were held at Forbes and Gunnedah. Prices were above average for the top boars and one boar was sold for $4100 to an AI Centre. Another Tocal tested boar was accepted for AI at Wacol Breeding Centre in Queensland.

Pig Health Monitoring Scheme (PHMS). Due to the widespread locations of abattoirs that slaughter pigs, private practitioners have been encouraged to monitor their client's pig health. Two meetings were held to promote this scheme to veterinarians, and to provide additional training in abattoir monitoring. Follow up is intended to promote the PHMS to producers.

Enzootic Pneumonia. Auspharm International have a joint venture agreement with the Department to develop a vaccine for enzootic pneumonia and have contributed $145 000 to the project. Technology of vaccine production developed by Departmental researchers will be used to produce large volumes by commercial processes. Further clinical trials are planned in intensively housed pigs.

Erysipelas. Research at the Elizabeth Macarthur Agricultural Institute is developing a more effective vaccine for this disease. The techniques being developed may be applied to other vaccines.

Housing and Environment. On-farm monitoring has highlighted deficiencies in pig shed environments.

District officers have assisted producers with environmental control design for farrowing, weaner and grower sheds.

Polyducting is being used more commonly in piggeries to provide better shed environments.

Research. Research at Wollongbar has concentrated on the development of techniques for efficient and accurate assessment of amino acid availability in rations for pigs. The work has shown

that the availability of key amino acids such as lysine, threonine and methionine can be difficult to assess in heat-damaged protein concentrates by ileal digestibility techniques.

Additional research at Wollongbar has shown that the effect of enzyme inhibitors in some grain legumes is minimised by heat-processing.

Joint studies between the Department's researchers at Wollongbar and postgraduate students at the University of New England have established the level of phosphorous necessary for optimum growth of finisher pigs. A new technique for assessment of energy expenditure in pigs has been developed to determine the relationship between energy expenditure, respiration rate and feed intake in pigs at high temperatures.

POULTRY

Response to Deregulation of the Egg Industry. The NSW Egg Industry was deregulated in July 1989. Advisory officers conducted a series of seminars to help egg producers consider their options and farm management strategies. Budgets were presented on alternative systems of housing, on-farm feed milling, on-farm egg packing and different management practices. Computer models developed have been used to monitor the profitability of egg production and the likely impact of changes in costs, prices, marketing policies and management practices.

Free Range Egg Production. A number of activities were held on the production and marketing of free range and organically grown eggs.

Poultry Housing. Electronic data loggers were used to monitor environmental conditions in layer and meat chicken houses. The data demonstrates the economic benefits of regulating poultry house temperatures at the optimum range of 20–28°C.

Poultry Welfare. A national review of the Model Code of Practice for Poultry was coordinated in close conjunction with the poultry industry and welfare organisations Australia wide.

Newcastle Disease (ND). An ND workshop (funded by the Chicken Meat and Egg Industry Research Councils) was organised in conjunction with industry. Speakers presented papers on recent and current research into ND diagnosis and control. Future research needs and priorities were evaluated.

Infectious Laryngotracheitis (ILT). Industry funded research evaluated the efficacy of milder strains of the virus for use in vaccines. Application of the vaccine in drinking water and aerosol sprays in broiler flocks has been successful and the longevity of protection is under investigation.

Avian Vaccines. The Department regulates the safety and potency of poultry vaccines. Liaison between the Department, vaccine manufacturers and the poultry industry, when a breakdown of the specific pathogen free (SPF) flock occurred, ensured an uninterrupted supply of vaccines.

Poultry Meat Production. The Department is recommending a new live bird pickup and delivery system known as the 'Anglia Easy-flow'(R). Three processors are now using it, with estimated savings in excess of $700 000 per annum.

A series of chicken meat industry seminars coordinated by the Department were held throughout Australia on the management of meat chickens, poultry houses and farm businesses.

Interest in the commercial production of game birds and waterfowl continues, and negotiations are in progress to develop export markets for quail and guinea fowl produced in NSW.

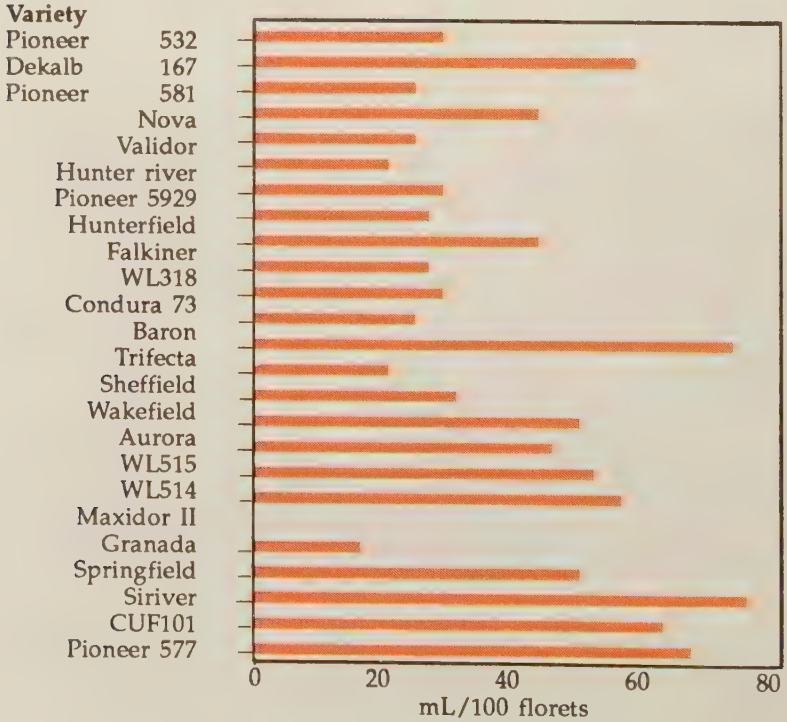
An interdepartmental committee has prepared a report incorporating guidelines for the commercial production of emus in NSW.

BEES

Pollination. Research on lucerne pollination shows correct agronomy practices and pollination can increase lucerne seed yield.

There is a strong relationship between nectar production, bee visitation and seed yield. Nectar yield between different cultivars varied widely as indicated in Table 2. These results indicate a potential for plant breeders to select higher nectar and sugar producing cultivars to increase pollination efficiency and give higher seed set.

TABLE 2
NECTAR YIELD



Beekeepers can provide pollination services to significantly increase crop yields.

Genetic Improvement. This project improves honey production and demonstrates the value of following a planned improvement program. The top queen was purchased this year for $400, twice the commercial rate for breeder queens.

Progeny from some of the stock are being exported. Approximately 73 760 queen bees are reared in the State for sale each year. Export demand is increasing because of the genetic quality and disease free status of the NSW honey bee population.

Education. 250 copies of the Beekeeping Home Studies Course have been sold, with 36 being sold interstate. The International Bee Research Association has requested a copy for their international library.

REGULATION

STOCK IDENTIFICATION

The Department ceased the registration of Large Stock Brands under the provisions of the Registration of Stock Brands Act, 1921 and transferred the responsibility to RLPBs on the 1 August 1989. Board Secretaries now issue 'Board Brands' which are unique to each Protection Board district. All brands that were registered prior to the 1 August 1989 will be re-registered under the provision of the Rural Lands Protection Act, 1989. The change of responsibility allows the registration to be updated annually using the land and stock return.

The new Legislation provides three additional forms of identification for cattle, namely freezebranding, ear tattooing and ear marking. This allows stock owners to use an alternative to firebranding.

Stock Identification Seminars. During September 1989, ten very successful seminars were held throughout the State to outline to RLPBs, producers, police and other interested groups the proposed changes to stock identification legislation and procedures.

STOCK DISEASES LEGISLATION

Preparation of a Bill for the control of Exotic Diseases of Stock is advanced.

Amendments to the Act were proclaimed which greatly increase penalties under this Act. Revision of the regulations under the Act to conform with the regulatory review under the Subordinate Legislation Act 1989 were completed.

Increased prosecutions occurred during the year mainly for illegal introduction of stock from Queensland, failure to comply with undertakings in lieu of quarantine, and allowing infected stock to stray.

STOCK FOOD REGISTRATIONS

The requirement for registration of pet foods was discontinued with no adverse effect on the industry.

On 30th June 1989 there were 983 products registered and the number in each product category is set out in Table 3.

TABLE 3

Registered Stock Foods
– by type –

Abattoir by-product	38
Complete Feed	332
Concentrate	40
Grain Balancer	24
Grain Mix	6
Milk Replacer	17
Processed Grain	50
Stock Lick	109
Supplement	315
Vegetable by-product	52
TOTAL PRODUCTS:	**983**

ANIMAL QUARANTINE

Following the outbreak of Bovine Spongiform Encephalomyopathy (BSE) in cattle in the United Kingdom (1986–87) the total ban on the importation of live cattle and their genetic material from the UK, still applies. Restrictions have also been placed on importation of cattle semen and ova from other countries.

RESIDUES IN LIVESTOCK

Monitoring livestock for organochlorine residues continued at abattoirs as part of the national Exception List (EL) testing program and the domestic monitoring program (see Table 4). 1100 NSW cattle properties were identified for continued monitoring. All cattle slaughtered with emergency tailtags from Moss Vale and north coast pasture protection districts were monitored for OC residues to check small properties which infrequently turn off cattle.

TABLE 4

Domestic Fat Samples—Organochlorine Residues—1989

	Beef	*Pig*	*Sheep*	*Poultry*
Total Samples Analysed	2690	952	1761	323
Samples with residues 50–100% MRL	31	3	–	–
Samples with residues > 100% MRL	13	3	–	–
Breakdown of samples with residues > MRL				
Dieldrin	10	2	–	–
DDT	1	1	–	–
Oxychlordane	1	–	–	–
PCB	1	–	–	–

MRL = Maximum Residue Limit

There were no OC violations in 323 poultry fat samples analysed compared to four violations detected in 1988.

Antibacterial urine testing of calves at NSW export abattoirs by the Department of Primary Industries & Energy continued to show a sulphonamide violation rate of around five per cent indicating that some farmers are not observing correct withholding periods following treatment.

17 cadmium violations were detected in NSW cattle by the National Residue Survey Testing Program. Three mercury violations were detected in pigs. Property follow ups indicated that phosphate fertilisers were probably the source of the cadmium residues and fish meal the probable source of the mercury residues.

Fifty five arsenic and three organochlorine wool residues were notified to the Department by the Australian Wool Corporation. Property investigations resulted in prosecution of one woolgrower for the use of dieldrin on sheep. Guidelines were drawn up to assist in the investigation of wool residue problems. There was little illegal use of arsenical dips and most arsenic wool residue problems were due to accidental contamination of sheep in dips and yards contaminated with arsenic prior to 1986.

In order to strengthen beef industry compliance with the declaration system for hormonal growth promotants, a revised declaration system was included on the Rural Lands Protection Act Travelling Stock Statement as a temporary measure.

AGRICULTURAL AND VETERINARY CHEMICALS

Agricultural Chemicals. The Pesticides & Allied Chemicals (Amendment) Act, 1989 gives effect to the clearance mechanism for agricultural chemicals provided in the federal Agricultural & Veterinary Chemicals Act, 1988.

The Department gave priority to the establishment of Australian protocols and guidelines to deal with issues such as a Code of Good Manufacturing Practices for Veterinary Chemicals and the labelling requirements for home garden chemicals.

Veterinary Chemicals. In October 1989 the NSW Stock Medicines Bill containing provisions for the control over sale, use and distribution of veterinary chemicals was passed.

The new Act introduces triennial instead of annual re-registration fees which will provide a net saving for both industry and the Government.

There were 1807 stock medicines registered in NSW as at 31 March 1990.

76 analyses of stock medicines were conducted in 1989–90 by the Stock Medicines Analyst for compliance with the registered formulation. 13 (17.1 per cent) failed to comply and the manufacturers were requested to rectify the deficiency to maintain their registration.

Significant progress was made on the development of computerised systems to facilitate access to agricultural and veterinary chemical registration data. The development of the Agricultural and Veterinary Chemicals Information System (AVCIS) was completed.

Category of application	Number received
PESTICIDES	
New product	502
Additional label	387
Additional container	131
Formulation change and other registration correspondence	1053
Permit	557
Aircraft (Pesticide Applicator) licence	
—reneweals	28
—new	7
Pilot (Pesticide Rating) licence	
—renewals	103
—new	30

Inspections. During 1989–90 inspectors under the Pesticides Act, 1978 carried out 3500 inspections. These inspections included routine monitoring of supply outlets for sale of unregistered pesticides. They also included investigations of possible breaches under the Act.

7 prosecutions were launched in this period with 4 being successful.

Registration. 100 submissions made to the Australian Agricultural and Veterinary Chemicals Council for clearance of new agricultural and veterinary chemicals were assessed.

Pesticide Advisory Programs. The Pesticides Project Team continued to coordinate programs on the proper use of agricultural and veterinary chemicals to ensure the production of wholesome and acceptable commodities.

The publication, 'Care With Animal Medication on the Farm', was printed and distributed to teach livestock owners how to safely use and handle animal medication. A 'Think Before You Spray' package on agricultural chemicals and their safe use was distributed to schools.

NATURAL DISASTER PREVENTION AND RELIEF

FLOODS

Record rainfall between 300–600mm in only a few days over Northwest New South Wales and Southern Queensland caused sudden severe flooding in the Bogan and Barwon systems in April 1990. About 50 000 square kilometres in the north-west of the State were inundated.

The Lachlan River between Forbes and Euabalong was also flooded at this time.

These floods caused heavy losses of livestock (estimated at about 100 000 sheep plus some cattle), crops (cotton $50 mil), capital structures and machinery and plant. A major fodder drop

operation was mounted using RAAF aircraft flying out of Walgett and Narromine, which involved the feeding of about 250 000 marooned, starving sheep with over 56 000 bales of hay.

Assistance in the form of transport and fodder subsidies was provided during the year following flooding to coastal areas, also in April.

During the year $200 426 was paid out on flood stock transport subsidies, $307 485 on hay purchase and transport subsidies; and $157 092 on miscellaneous costs associated with aerial fodder drops, including $112 173 on helicopters.

Wet conditions since April have generally prevailed throughout the inland which have reduced quality and delayed the harvest of summer crops and affected the timing and germination of the sowing of the winter crops.

DROUGHTS

Many areas in the North-West and Central-West of NSW which were declared drought stricken at the beginning of April suffered devastating floods during the same month.

Expenditure on road transport subsidies and drought relief during the year was $350 368.

BUSHFIRES

NSW Agriculture & Fisheries spent $9349 on road transport subsidies for bushfire relief and $5000 on hay subsidies and $40 403 on miscellaneous costs associated with disposal of burnt stock following bushfires that occurred in the Riverina during the 1989–90 bushfire season.

PLAGUE LOCUSTS

No serious outbreaks of Australian plague locusts occurred during the year in NSW and adjoining States.

VERTEBRATE PESTS

The Vertebrate Pest Control Advisory Committee finalised strategic plans for rabbit, feral pig and wild dog control. The plans have been endorsed by the Minister and are now in place. Model plans have been circulated to all RLPBs.

High rabbit densities have persisted in many areas of the south west of the State where a number of Landcare groups have been formed by landholders, RLPBs and the Soil Conservation Service to coordinate and fund eradication.

Trapping studies and field reports confirm that mouse numbers are exceptionally high in areas of the central and southern parts of the grain belt. Extension effort will aim to encourage farmers to clean up mouse harbour around cropping paddocks to reduce population build up. No pesticides are registered or are likely to be registered in the near future for broadacre in-crop control. A Pesticide Order has been issued for use of bait stations within crops.

Feral pigs which cause considerable lamb loss should be lured more easily into traps following the development of new techniques to induce oestrus in sows.

For the first time, veterinary inspectors employed by RLPBs and Departmental veterinary officers combined to hold a conference. Field veterinarians gained an awareness of the priorities and constraints of their clients as well as updating technical knowledge of important disease problems.

ANIMAL WELFARE

The Department has continued its role in the promotion of good animal welfare practices in animal husbandry. Close liaison has been maintained with the Animal Welfare Branch of the Department of Local Government and welfare organisations through representation on the Animal Welfare Advisory Council.

The Department has made written and verbal submissions regarding the pig industry to the Senate Select Committee enquiring into animal welfare.

ARTIFICIAL BREEDING

The Stock (Artificial Breeding) Act, 1985 took effect from 24 November 1989. This new legislation provides for the control of commercial artificial breeding in all livestock species. The Act aims to avoid the dissemination of diseases and genetic defects through artificial breeding procedures. Premises, persons and stock used in artificial breeding are controlled by the Act.

At the close of the year, 17 premises were licensed as Artificial Breeding Centres. These centres involved cattle (6 premises), sheep (10 premises), goats (7 premises) and horses (1 premises).

An additional 15 premises have been licensed to store and distribute semen from various species.

Over 200 Certificates of Competency to perform a variety of artificial breeding procedures have been issued. These entitle persons who are not veterinary surgeons to inseminate female stock or to collect, process and distribute semen or ova from stock.

VETERINARY LABORATORY TESTING SERVICE

Laboratory fees were introduced for an expanded range of veterinary tests of private benefit to livestock producers in animal health management.

The promotion of commercial testing services is an essential part of major disease control programs such as footrot and worm control in sheep. This fee for service concept has been well accepted by the livestock industries and has resulted in an increased demand.

Diagnostic tests which provide assistance to veterinarians in their investigation of animal disease outbreaks remain free of any charges. This work is essential for the protection of the livestock industries from exotic disease threats and so maintain the privileged position of Australia in world export markets.

The Department also provides disease investigation services to the aquaculture and fishing industries through the Regional Veterinary Laboratories.

Recent disease outbreaks, as well as the general intensification of aquaculture in NSW, have resulted in increased demands for these services. Several serious outbreaks of disease in oyster hatcheries and marine prawn hatcheries have been investigated, and a research project into causes of bacterial diseases of hatchery-reared larval marine prawns is in progress.

Ongoing research into red spot, an ulcerative skin disease of estuarine fish, has identified the invasive fungus, *Aphanomyces*, which is the most likely cause of the extensive tissue destruction.

The largest construction program ever undertaken by NSW Agriculture & Fisheries was fittingly recognised in this centennial year when Premier Nick Greiner officially opened the $35 million Elizabeth Macarthur Agricultural Institute (EMAI).

The institute is on 1600 ha of historic Camden Park, home to John and Elizabeth Macarthur. NSW Agriculture & Fisheries became responsible for the property in May 1984. It is fitting that Australian agriculture continues to be served from its birthplace, Camden Park.

Years of planning and months of relocation activities culminated in the official opening ceremony on April 25th 1990. Hundreds of guests heard Mr Greiner proclaim the Institute as one of the world's finest agricultural and research laboratories.

State of the art facilities at the Institute replaced the outmoded facilities at the Glenfield Veterinary Research Station, established in 1923.

The relocation of staff and equipment commenced during January 1990 and continued for two months. This massive exercise in logistics was achieved smoothly and efficiently.

Other departmental units which have relocated at the Institute are the Camden Advisory Office, the Hawkesbury Research Unit at Richmond and some field staff from Seven Hills.

Over 180 staff members now occupy the 27 buildings in the complex. Stage 3 of the building project, which represents the animal houses and maintenance building, will be completed in Spring 1990.

As the central and major resource of the department's veterinary laboratory network, the Institute consists of veterinary and animal production research and diagnostic laboratories, and a Regional Veterinary Laboratory.

Staff are currently working on 20 research projects ranging from producing a blood test to detect viruses in trout to investigations into metabolic diseases in cattle, and footrot in sheep. Collaborative projects include evaluating a new generation of Salmonellosis vaccines with CSIRO, and developing trials to assess the risks and benefits of sewage sludge on agricultural land with the Water Board. A commercial vaccine for swine

erysipelas is set to be produced and marketed, and an akabane vaccine for cattle is due to be registered. Also currently being assessed under field conditions is a vaccine for the control of enzootic pneumonia in pigs. Industry funding support for these projects was worth $1 million in 1989–90.

In late 1989, fee-for-service diagnostic testing for disease control was introduced. This, combined with charges for export certification, generated income in excess of $400 000 for the year. The move towards full cost recovery for diagnostic tests will continue into the future.

Community access will be an important feature of the operations on the property. Camden Park is well on the way to becoming the focus for the promotion of agriculture to both the urban and rural communities.

The high profile of the department's activities on Camden Park is a result of AGVIEWS 88 and 90. These educational and non-commercial field days were run over three and five days respectively to bridge the city-country gap and promote the achievements and future directions of the department. AGVIEW 90 was the chief celebration of the department's centenary, and was proclaimed a huge success by the public, industry, the media and the rural community.

Local, rural, commercial, scientific, educational and special interest groups and organisations will be involved in community based events such as field days, conferences, promotional and educational activities at EMAI.

The agricultural heritage, historic buildings and the museum flock of Camden Merinos (direct descendants of the original Macarthur sheep) are an important aspect of the community activities on the property.

EMAI first assumed the status of an "Institute" with the appointment of a new position of Director in August 1989. One of the priority tasks was to develop a five year Strategic Plan to methodically approach future needs for research and diagnostic work; farm development; environmental enhancement; building maintenance and the running of community-based activities.

Darling River in flood.

FISH INDUSTRIES

The Division of Fisheries' principle objective is to protect aquatic habitats and develop management plans for fisheries which will maximise the sustainable yield of fish for both commercial and recreational purposes.

REVIEWS

During the year two reviews were completed and reports published. The Administrative Review of Fisheries conducted by officers of the Division and the Regional Administrative Officer, Region 4, recommended changes to the administrative structure of the Division to make it more effective. Almost all recommendations were accepted and most have since been implemented including a centralised records system, greater budgeting control for section managers and computerisation of oyster lease branch.

The Oyster Industry Task Force Report was also released. The Task Force examined ways of ensuring the longterm viability of the important oyster industry (valued at over $35m annually) with many of its recommendations due for implementation during 1990–91. One of the recommendations, the creation of an Oyster Management Advisory Committee (OMAC) to advise the Minister on oyster related issues and improve communication between Government and industry, has been implemented and the inaugural meeting was held in May.

FISHERIES REGULATION AND MANAGEMENT

COMMERCIAL MARINE FISHERIES

Catch Statistics Database. The Special Fisheries Officer (Marine Inshore), several research officers and up to 7 data entry staff commenced work on the backlog of fishermen's catch statistics which had not been computerised since 1984. This information supplied by fishermen each month indicates what species were caught, where, how many and by what method. The data provided is crucial in developing management plans for the various fisheries. A new fisherman's catch return form was designed and advisory notes drafted for its introduction.

Commercial Fishing Advisory Council (CFAC). Legislation was passed to establish the Commercial Fishing Advisory Council and allow for election of the 19 council members and fishermen to the 7 Regional Advisory Committees. The council is funded by a $200 levy on all licensed fishermen. The Department provided the Chairman and Executive Officer for an interim CFAC pending formal election of members. CFAC met four times during the year and discussed various issues dealing with commercial fishing including the introduction of the master fisherman's licence.

Management Committees. With two additional commercial fisheries managers, attention was refocussed on an overall management plan for NSW fisheries. A proposal for a series of management units was presented to CFAC and action initiated to set up consultative bodies agreed to under this proposal. A draft corporate plan was provided to CFAC to assist with its consideration of the consultation and decision making process for the whole state.

Management plans currently under consideration by CFAC/industry, include purse seine fishery, spanner crab fishery, trap and line fishery and a review of the metropolitan estuarine prawn trawl fishery.

East Coast Trawl. A management committee was elected from offshore prawn trawling endorsement holders and a draft management plan for all trawling in state controlled waters (after Offshore Constitutional Settlement (OCS)) prepared. Components of the plan relating to offshore prawn trawling including net restrictions and entry criteria, were submitted for the Minister's approval following a brief period of industry review whereas the fish trawling proposals were referred to industry for wider comment.

Tuna. An industry meeting was convened to prepare an industry/government position paper on management of tuna harvesting by methods other than longlining. This was tabled at a meeting of the East Coast Tuna Management Advisory Committee attended by the Federal Minister. NSW presented a strong case there and at subsequent meetings on a joint Japanese/Australian venture involving Japanese vessels in Australian waters to ensure that minimal conflict with local fishermen occurred and that maximum information of use to our industry emanated from the project.

Abalone Management. A total allowable catch (TAC), allocated to divers in 100 unit packages (equivalent to 10 tonne annual quota) was introduced during the year and with industry agreement was made retrospective to 1988. Discussions took place with other states to examine the possibility of establishing a national export quota monitoring scheme. The Federal Government approved a $1.5 million buy-back scheme under the National Fisheries Adjustment Program and permit fees increased from $3300 in 1988–89 per diver to $5270 this year to ensure 100% industry funding. This represents the first instance of the Department entering the commercialisation area in fisheries management. The 1988–89 1989–90 estimated production of 820 tonnes was less than the allowable catch of 870 tonnes for the two years.

Gemfish catch being landed aboard

South East Trawl Fishery. A major breakthrough appeared to have been achieved when the NSW position (that there are actually three sub-fisheries to be managed separately) was adopted. Subsequently a Standing Committee On Fisheries working group reached agreement on future management directions based on Individual Transferable Quotas (ITQ). A delay in announcement by the Federal Minister and a massive increase in orange roughy catches off Tasmania led to a sellout of NSW boat units (many operators receiving up to $5000 for each unit) similar to that seen some years ago in the southern bluefin tuna fishery. As a result the NSW fleet in the South East Trawl Fishery has been reduced from 75 to less than 40 vessels.

Refinement of the assessment of the gemfish resources indicated the total allowable catch should be further reduced from 3000 to 1750 tonnes for the 1990 season (May to August). This was necessary in the interests of resource conservation and long-term sustainability of optimum catches and was prompted by a 1989 gemfish catch of only 2000 t with very few 4 year olds.

EEL FISHERY

A policy was announced for this fishery with different conditions applying to different water habitats ie freshwater impoundments, private dams, estuarine streams, freshwater streams and brackish waters.

In estuaries trapping gear is prescribed by Regulation; in freshwater impoundments gear used has been agreed to by this Department, the National Parks and Wildlife Service and the fishermen concerned.

WHITEBAIT

Whitebait is a generic term for very small fish and crustaceans which are spasmodically abundant in estuarine and inshore areas. Good prices can often be obtained and an adaptive management approach was taken to obtain more information about the distribution and abundance of the species targeted by fishermen. Permits to use small mesh hauling nets for up to three years in six areas were issued to five operators in estuaries on the NSW coast. Permit conditions specified that a detailed logbook was to be kept, and that samples of whitebait were to be supplied for identification.

JELLYFISH

Special licences were issued and the Department acted as a contact point to facilitate the establishment of a 'jellyfishery'.

KINGFISH TRAPS

A review of temporary management rules was undertaken and a proposal presented for management of the highly controversial floating traps. The Minister agreed to allow continued use of the traps whilst fishermen and the community considered the management plan. Regulations were introduced to control how traps were to be moored and marked.

LEGISLATION

In November, 1989, an Advisory Committee including industry representatives was established to review the Fisheries and Oyster Farms Act, 1935, with the object of providing a new Act.

A Working Committee was also formed and a draft proposal for a new Act was selectively distributed for comment during January, 1990. Mr Bill Brinsley, Chief Inspector, was appointed to a new position of Special Project Officer (Legislation Review) to manage and coordinate the review.

In March, 1990, representatives from Fisheries Departments of all States excepting South Australia and the Northern Territory attended a meeting convened by NSW Agriculture & Fisheries to discuss a common approach to, and uniformity in, State fisheries legislation.

COMMERCIAL FISHING LICENCES

The computerised licensing system is now fully operational and has reduced delays in the issue of licences quite considerably. In most instances licences are being issued within two weeks of receipt despite a number of staff vacancies in the licensing section which occurred during the year.

	No. Issued July 1989–May 1990	*Average Delay from Receipt to Issue (Days)*
NSW Fisherman's Licences	2136	12
NSW Fishing Boat Licence	2953	8
Commonwealth Master Fisherman's Licences	1097	10
Commonwealth Fishing Boat Licence	757	8

A total of 264 new fisherman's licences were issued during the year. Almost all were issued to applicants who had purchased existing licensed fishing boats. There are currently **2593** licensed fishermen of whom **1296** hold Commonwealth Master Fisherman's licences as well. There are **3382** NSW commercial fishing boats of which **869** also hold Commonwealth fishing boat licences.

FISHERIES ENFORCEMENT

STAFFING

Staff levels of Inspectors were maintained at 87 for the year. The Jindabyne office which had previously been considered for closure was maintained to permit continued supervision of the important cold water inland fishery in the Snowy Mountains.

FISHERMAN'S WATCH

A '008' telephone service 'Fishermen's Watch' was established (008 043536) and now provides a 24 hour, 7 day per week point of contact for reporting illegal fishing.

SPECIAL OPERATIONS

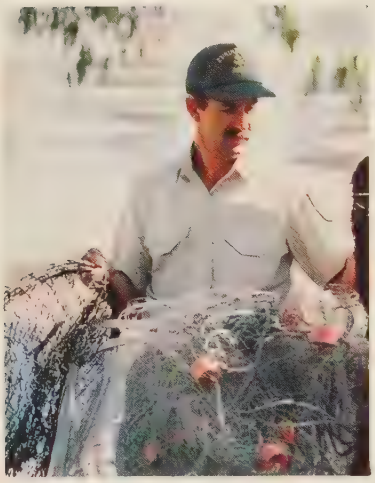
The Enforcement group conducted a number of special operations during the year combining both the Mobile Squad and regionally based officers.

A notable success was a week long raid on inland waters in the far west of the state during the floods which resulted in the seizure of drum nets and other illegal equipment and the prosecution of over 20 persons.

Similarly a coordinated inspection of food stores and restaurants in the Sydney Haymarket area resulted in over 200 kg of illegal abalone being seized on a single day.

FINES AND PENALTIES

Penalties under the Fisheries and Oyster Farms Act were increased in October 1989. Offenders now face penalties up to $10 000 in the case of individuals or $20 000 in the case of corporations. The new Penalties also make provision for the forfeiture of boats and/or trailers upon conviction and court order.



Seized fishing nets.

During the year there were 1219 Informations laid before the courts. Additionally Inspectors issued 572 penalty notices from which 79 enforcement notices resulted.

SHARK MESHING

Results of the shark meshing program September, 1989 to April, 1990.

Beaches Meshed	*Species Caught*				
(Stockton Beach Newcastle to South Wollongong)	Bronze Whaler	White Pointer	Tiger	Hammer Head	Other
TOTAL	**58**	**2**	**5**	**63**	**17**

Total cost of the shark meshing program was $232 000.

AQUACULTURE

PRAWNS

The NSW prawn culture industry has continued its march forward. A NSW hatchery was able this year, for the first time to routinely produce prawn postlarvae by artificial insemination techniques. The price of postlarvae to the farmer fell, thereby reducing costs to the industry, but the supply and quality of postlarvae remains a continuing problem. Nursery ponds were widely used this year in an attempt to grow a second crop of prawns and paddlewheels are now being more commonly used as a tool for managing water quality. The industry is also showing increased specialisation with a commercial fisherman harvesting many of the ponds this year for the first time. Prawn production this year increased to 170 tonnes.

FISH FARM PERMITS

A number of new permits have been granted to crayfish farmers in the Port Macquarie and Port Stephen areas, but the crayfish industry continues to show little output. Total fish farm permits in 1989–90 were 110.

OYSTERS

PACIFIC OYSTER CONTROL PROGRAM

The program to control Pacific oysters and preserve the Sydney Rock Oyster industry continued.

The control plan was enforced in estuaries, mainly Port Stephens, where 40 Notices were issued to oyster farmers requiring them to remove Pacific oysters from their leases.

A review of the plan which permits limited movement of oysters from Zone 3 (Wallis Lake to Clyde River) into Zone 2 (Wooli River to Manning River) was completed with assistance from industry. Limited movements into Zone 2 are permitted.

CONVERSION OF OYSTER LEASES TO THE TORRENS SYSTEM

The amendment Acts (Real Property {Oyster Leases} Amendment Bill, 1990 and Fisheries and Oyster Farms {Oyster Leases} Amendment Bill, 1990) necessary to permit the registration of oyster leases under the Torrens Title system were passed in Parliament.

This should offer greater security to banks and lending institutions as they will be able to register their interests over a lease on the Certificate of Title. Oyster farmers will benefit by being able to use oyster leases as collateral security for money borrowed.

Computerisation of Oyster Lease records was commenced during the latter stages of the year and data entry is proceeding. The system will provide information concerning oyster farming operations in each estuary and will be of great benefit to the Department for the proper management of this important industry. There are currently 1100 lessees and 4100 leases.

TROUT HATCHERIES

NATIVE FISH STOCKINGS FOR 1989/90

Species	*Total Released*
Golden perch	389 700
Silver perch	179 300
Murray Cod	24 300

GADEN AND DUTTON PRODUCTION 1989–90

Species	*Stage*	*Fish Released*	*Donations to Acclimatisation Societies and Sales*
Atlantic Salmon	fry	405 000	–
	adults	284	–
Brook Trout	fry	–	5 500
	fingerlings	–	–
Rainbow Trout	fry	–	2 130 000
	fingerlings	160 000	129 000
Brown Trout	Fingerlings	–	25 700
Eyed ova (brown and rainbow trout to volunteer hatcheries			150 000

RECREATIONAL FISHING

A number of major policy decisions affecting recreational fisheries have been taken in the past year.

FISH TRANSLOCATIONS

The Department's translocation policy was revised. It now provides for golden perch and silver perch, species native to the western drainage, to be stocked into impoundments east of the Great Dividing Range. Similarly Australian bass can now be stocked in impoundments west of the divide. Stockings of all

other species (including Murray cod) continue to be restricted to their native range. This policy recognises that golden perch and silver perch are already widespread in farm dams on the east coast and allows the Department to duplicate the tremendously successful stocking of golden and silver perch into Glenbawn Dam in 1979 in other eastern drainage impoundments.

BAG LIMITS

The Minister announced the introduction of bag limits for a number of marine species. These bag limits will have little effect on the average anglers' catch but will allow the Department to greatly curtail the practice of "shamateurism"—selling the recreational catch. Fishing pressure on our stocks continues to increase and studies have shown that in some estuaries anglers take more fish than commercial fishermen.

RECREATIONAL FISHING MANAGEMENT TRUST

The Minister established the Recreational Fishing Management Trust in March, 1990, to provide for the collection of donations and contributions from anglers, fishing clubs or industry sponsors as a replacement to the inland angling licence. The Trust has two industry and one Departmental Trustees to administer the Trust and determine funding priorities etc.

HABITAT MANAGEMENT

WATER QUALITY

The environmental problems associated with fisheries management were pushed to the forefront this year with pollution of our waterways and coastal development having a high profile. The Division of Fisheries participated in several Commissions of Inquiry including the Brooklyn Development, Boydtown Marina and Goodwood Island, as well as a public hearing into the North Ocean Shores Development. The findings of the Brooklyn Development Inquiry were a landmark decision. The Commissioners stressed the need for soundly based water monitoring programmes along the Hawkesbury which will probably have significant implications for future similar developments.

Overall the Habitat Management Unit provided comment on over 200 development applications, environmental impact statements, plans and studies throughout the state.

PULP MILL

An important issue was the proposed pulp mill at Grafton. A substantial departmental submission and the support of the local commercial fishermen were instrumental in highlighting the current lack of adequate environmental guidelines for such developments.

SOLITARY ISLANDS

A draft management plan for the Solitary Islands Marine Reserve was prepared and distributed for public comment in July and August, 1989. The response from the public was very encouraging and 374 submissions were received, the vast majority of which supported the concept.

FISHERIES RESEARCH AND DEVELOPMENT

The Fisheries Research Institute received approximately $2.5 million in the 1989–90 financial year from outside organisations (Fishing Industries Research and Development Council, Department of Defence, State Pollution Control Commission and Water Board) to conduct research programs. Some of these programs are mentioned below.

AQUACULTURE

Snapper and jewfish have been identified as potentially suitable marine species for aquaculture. Initial research at the Fisheries Research Institute (FRI), Cronulla has shown that growth rates of smaller snapper in captivity are considerably faster than for the same species in the wild. Further improvements in growth rates are anticipated with the development of optimum feeds and elevation of water temperature.

Oyster research at the Brackish Water Fish Culture Research Station (BWFCRS) concentrated on the production of a faster growing Sydney rock oyster through selected breeding. Triploid Sydney rock oysters were also produced for evaluation on commercial oyster leases.

Scallops that were successfully spawned at BWFCRS in May 1989 were set out in Port Stephens and later in the year a subsample was relaid in Jervis Bay. Growth and survival will be monitored in 1990–91. Scallops appear to have considerable potential for aquaculture and the possibility of enhancing existing fisheries with hatchery produced spat warrants investigation.

An aquaculture-nutrition project was established at BWFCRS to formulate and develop diets for finfish, prawns and other aquaculture species as required. Close liaison is being established with animal nutritionists in agriculture as part of the development of agricultural based feeds (in contrast to traditional fish-meal based feeds) as the future foundation of the State's aquaculture industry.

Silver perch has been identified as a freshwater species with tremendous potential for aquaculture in Australia. Following public presentation of the details of this potential a major joint venture between NSW Agriculture & Fisheries and private enterprise is being negotiated to prove the commercial viability of the aquaculture of this species.

FRESHWATER FISHERIES RESEARCH

The freshwater research programs at FRI, BWFCRS, Grafton Agricultural Research & Advisory Station (GARAS) and the Inland Fisheries Research Station (IFRS), Narrandera, were revised. These programs provide information for the management of freshwater fish resources and environments.

Freshwater research projects that continued throughout the year included the following:

- Assessment of the Lake Eucumbene fishery for brown and rainbow trout including validating the ageing and growth rates of these species, and estimation of mortality and exploitation rates.
- Determination of the survival of young golden perch and silver perch over their first year of life after stocking in inland impoundments, including comparisons of the survival of newly hatched larvae and 30–40 mm juveniles, and the effects of predation pressure.
- Documentation of migrations of the River Murray fish community at Torrumbarry Weir including species representation, seasonality, environmental control and river regulation.
- Studies on the ecology of larval golden perch and silver perch in Murray-Darling basin wetland systems, including behaviour of larvae in simulated floodplain wetlands, their physiology under variable water qualities, and their behaviour in gradients of water quality.
- Compilation and analysis of long-term records of inland commercial fishing.
- Artificial propagation, and re-establishment in the wild, of the endangered species, trout cod.

MARINE FISHERIES RESEARCH AND EXPLORATION

Marine fisheries research, exploration and resource assessment are centred at FRI with the support of fisheries Research Vessels Kapala, Kamala and a number of smaller vessels.

Kapala's main role in 1989–90 was on the independent assessment of prawn/by catch abundance and distribution. The prawn/by catch program is a major initiative which will provide the basis for a better understanding of the prawn fisheries and their effects on commercially and recreationally important finfish.

SYDNEY OCEAN OUTFALL STUDY

A five year multi disciplinary environmental monitoring program was initiated in 1988 to assess the environmental impact and operation of the three new deepwater ocean sewage outfalls. This program was initially funded by the Water Board, however, as a result of changes in administration it is now sponsored by the State Pollution Control Commission. FRI is currently using longlining, otter trawling, gill netting, grab sampling and plankton tows to monitor the marine communities at the outfall sites and at three unpolluted sites. An initial assessment of the impacts of the Malabar deepwater outfall will be completed after the first 12 months of its operation.

Ready to set gill net.

POLLUTION STUDIES

Heavy metal concentrations in fish and oysters from throughout the State continued to be monitored in close liaison with the Health Department. A joint study was initiated with the State Pollution Control Commission on the occurrence of dioxin in fish from Homebush Bay.

JERVIS BAY STUDY

The second set of progress reports on FRI's involvement in the Jervis Bay Marine Ecology Study was forwarded to the Department of Defence in January. In December the Prime Minister announced that the Naval Fleet Base would not be relocated to Jervis Bay, however studies will continue through 1990–91 to provide data to be used in determining the impact of an armaments complex and in preparing an environmental management plan.

NORTHERN RIVERS PROJECT

Many sections of the field work for the Clarence and Richmond Rivers are nearing completion including:

- mapping of fish habitats,
- water quality assays,
- fish and prawn distribution and abundance surveys,
- assessment of the magnitude and impact of recreational fishing,
- the migration and growth of major commercial and recreationally important species from tagging studies,
- assessment of the usage of various habitat types by all stages of the life cycle of the major fish and invertebrate species.

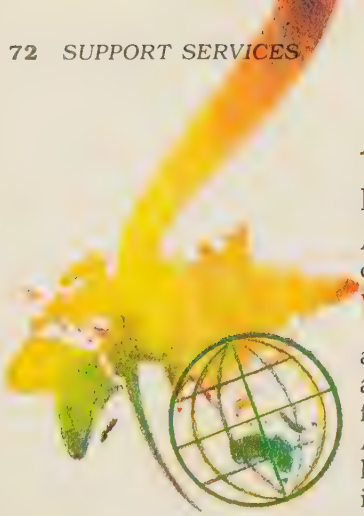
Data is now being entered into various computer systems for analyses, and preparation of reports. Field work on estuarine fish is to continue, however, concentrating on the Macleay and Nambucca Rivers.

VISITORS

In February, Capt. Jacques Cousteau visited the Fisheries Research Institute (FRI) to meet staff, discuss local research programs and exchange ideas on global marine issues including man's increasing pressure on the aquatic environment. In March, Rear Admiral Sir David Martin, Governor of NSW, and Lady Martin toured FRI and were given briefings on the aquaculture, freshwater and marine research programs.

SUPPORT SERVICES

Service groups that have a supportive role in departmental activities, are the Divisions of Rural & Resource Economics, Agricultural Services and Administration plus the specialist market development unit Agsell, Biological & Chemical Research Institute, Rydalmere, Elizabeth Macarthur Institute, Camden, Legal Branch and the Overseas Development Unit.



AGSELL

MARKET DEVELOPMENT SERVICE

Agsell completed its first full year of operation with priorities to develop markets for NSW and Australian agricultural products and with clear objectives and strategies devised to meet these priorities.

Agsell is placing special emphasis on promoting ties with Asia and in particular Japan. The growing consumption of high value added processed foods and the demand for high quality fresh food items throughout this region offers a natural market for Australian producers and suppliers. Specific product areas with high growth potential have been identified and targeted. These include processed foods, beef and other meat and horticultural products.

Agsell staff visited Japan and Asia on a number of occasions during the year to obtain first hand knowledge of the market requirements. These visits also enabled linkages to be established with leading retailers and supermarkets in Asia to improve access for Australian suppliers to the complex distribution networks in these crucial markets.

Buyers from Japan, Taiwan, Malaysia, Hong Kong, Singapore, Brunei and Sri Lanka have been introduced by Agsell to over 50 of Australia's leading companies that supply both fresh and processed foodstuffs. New business in the vicinity of $2M has resulted already from these initial introductions with assurances of ongoing and expanding business. Fresh fruit and vegetables, biscuits, confectionary, nuts, wine, cut flowers and a range of grocery items are the main products supplied to date.

In a further endeavour to provide practical support and assistance to increase the export of Australian foodstuffs into the Asian market, Agsell incorporated a joint venture company in Singapore to operate a wholesale shopfront in association with a group of leading Australian food and beverage manufacturers. This company called **Agsell Australia Pte Ltd** operates its shopfront in the International Merchandise Mart (IMM) in Singapore and trades under the banner of AUSFRESH—FROM THE GOOD EARTH OF AUSTRALIA. Agsell commissioned TNT-Alltrans Pty Ltd to provide professional management of the shopfront on behalf of the joint venture.The IMM is the largest international wholesale centre in Asia and it has been designed to become a nucleus for wholesaling throughout the entire region.

Agsell is involved in a range of other projects including provision of assistance to local growers of fruit, vegetables, cereals and legumes to market their products domestically and internationally and with advice and assistance in sourcing government funding for feasibility and marketing studies for new agricultural and food products for either export or import replacement. In one specific project, Agsell is assisting local industry to develop icecream and frozen yogurt products to suit the special requirements of the Japanese market.

Agsell is also working with the private sector to facilitate a variety of investments and joint venture opportunities. Examples include a major pig breeding and processing operation, vegetable processing, asian noodle production, meat meal, mineral water products and a goat breeding, intensive feeding and processing venture in Malaysia.

RURAL AND RESOURCE ECONOMICS

The Division of Rural and Resource Economics continued with the analysis and provision of advice on issues in economic policy, technology, industry structure, farm management, the marketing of primary products and biometry. The rural cost analysis unit, AGCOST was formally launched by the Minister and, in its first full year of operation, has made important contributions in the analysis of costs impacting on rural business. Another major new initiative has involved radical upgrading of the Flemington Market Reporting Service with the costs of significant service improvements being partially offset by the introduction of user fees.

Three major initiatives in evaluating Departmental programmes involved major inputs by the Division:

- a review of marketing intelligence needs and its production within the department;
- a review of pig advisory services; and
- a review of the Farm Cheque programme.

POLICY ANALYSIS

Members of the Marketing Board Review Team address a public meeting in Spring Ridge.

It was a year of major work in the areas of agricultural marketing policy, natural resource management policy and evaluations of Departmental programs with limited work on general monitoring of economic changes in agriculture.

The implementation of government changes to egg and wheat marketing occupied staff through the early part of the year in major changes to legislation, regulations and administrative arrangements. Members of the Division also participated in public meetings and seminars of producers to explain the changes. They also helped in preparation of publicity, coverage of industrial relations issues and payment of hen quota compensation.

This work was followed by the review of marketing boards constituted under the Marketing of Primary Products Act 1983 and in particular the review of the four coarse grains and oilseeds boards. The investigation process involved publication of an issues paper, grower workshops and public meetings throughout the state, public submissions, and preparation of thirteen background papers by consultants and internal staff. All this culminated in the writing and publication of a summary report, main report and supporting papers in May as policy discussion papers after their submission to the Minister. Members of the Division also assisted with reviews of fish and dairy marketing arrangements and with administration of funds for sugar industry adjustment.

In the area of natural resources policy, major analyses were conducted on the economic impact in agriculture of global warming (greenhouse effect), the economic management of acid and saline soils, and public pest management of grain pests and footrot.

Other major policy analysis work involved:

- preparation of a submission and co-ordination of the Department's submission to the Drought Policy Review Task Force set up by the Commonwealth Government;
- a review of legislation relating to NSW dried fruits packers; and
- an economic evaluation of irrigation reliability on the Barwon/Darling rivers, in association with the Department of Water Resources.

TECHNOLOGY AND INDUSTRY STUDIES

The research services of the Division are designed to assist farmers, industry and the Department through studies relating to R and D investments, evaluations of major programs and technologies, as well as market and industry investigations.

Technology evaluations included:

- estimating the costs and benefits of a major wheat breeding program;
- continuing research into the economics of cross-breeding and selection technologies in the beef industry;
- developing practical procedures for improving the provision of forecast information in the NSW and Australian lamb markets;
- analysing the economics of laser land forming;
- developing a model to account for different levels of soil salinity and waterlogged land in the Benerembah Irrigation District and to illustrate the benefits and costs of surface drainage and land forming over time;
- analysing the benefits and costs of piping the Tundra bore; and
- an evaluation of sustainable land management technologies through computer models such as the liming for acid soils model—Lime it II. This model was extended to account for a wider range of crops and varying acidification rates according to rotation and region.

Industry studies included:

- commencement of an industry funded study of the returns to investment in research and development in the pig industry;
- preliminary investigations of the economics of farm safety;
- the maintenance and upgrading of lamb, pig, beef and dairy industry models and the calculations of price spreads for the beef, lamb and pork industries;
- the resurvey of a selected group of Lower Hunter farms. Since the original survey in 1968 indications are that farm holdings have become more numerous, smaller, and on less total land, but the businesses are generally more intensive, involve more farm labour and produce a greater value of production;
- providing an economic perspective on rising watertables, salinisation and irrigated agriculture in the Murray Basin.

FARM MANAGEMENT

The farm management services of the Department are designed to help farmers and advisory staff adjust to changing economic, marketing and business pressures by providing information and management approaches relevant to farm business decisions. This was achieved in 1989–90 through a wide range of activities including:

- production of comprehensive budgeting and investment information for most agricultural enterprises and farm types throughout the State;
- evaluating the impact of the wool tax on sheep returns relative to other enterprises;
- analysing, via cash flow budgeting techniques, the economics of a range of enterprises including pasture improvement, cashmere and goat milk production, cattle and sheep production as well as a range of sub-tropical fruits;
- highlighting the tax consequences of bush fires and floods;
- analysing and holding seminars on the management implications of deregulation in the egg and wheat industry;
- illustrating the costs of the footrot eradication campaign to western graziers; and
- arrangement of seminars for farmers and agribusiness personnel on current farm management topics, such as pasture improvement, budgeting and feed budgeting, machinery economics and taxation.

FARM CHEQUE

The Farm Cheque program continued to promote the integration of whole farm physical and financial management for better decision making. Some 200 farmers in nine groups throughout the Central West and South East NSW were enrolled in the program at June 1990. The program undertook its first comparative analysis using Farm Cheque software and, based on feedback made by farmers, further improvements were made to the software.

The program entered a statewide expansion phase and a state co-ordinator and a special economist were appointed and four regional co-ordinators were in the process of being appointed to foster its expansion.

The program continued to engender considerable support and interest from a range of organisations. Sponsorships were provided by the Commonwealth, ANZ and Westpac banks as well as by the NSW Rural Industry Training Council. Enquiries about the Farm Cheque concept came from accountants, farm and industry groups and State departments of agriculture. Numerous Farm Cheque presentations were made to interested parties including the Prime Minister of the USSR and a subsequent delegation from the USSR Embassy. Two videos were made to promote Farm Cheque, one for local consumption and one for the Russian market.

AGCOST: THE RURAL COST ANALYSIS UNIT OF NSW

AGCOST was launched by the Minister for Agriculture and Rural Affairs on the 28th of August 1989 in Parkes. The Minister announced the establishment of an Advisory Board, comprising a wide range of representatives of the rural community, to provide an industry and farm level perspective on current and emerging issues.

The role of AGCOST is to identify and analyse costs which impact on rural businesses. During 1989–90 the Unit made good progress in establishing industry recognition and credibility through its central role in commenting on a wide range of issues including:

- comment on the NSW Government's Draft Credit Bills;
- a submission to the Federal Government's review of taxation arrangements relating to the prevention and treatment of land degradation;
- the scope for increasing the average net bale weight and its impact upon wool harvesting, marketing and distribution costs; and
- extensive work on the effects of Commonwealth Income and Capital Gains Tax, including the tax deductibility of wool purchased on the sheep's back and various taxation anomalies.

AGCOST has also produced two editions of "Country Guide: a directory of NSW government services for country people".

The unit has pursued an active extension program covering the production of various publications, numerous press releases, media talks and seminar presentations.

RURAL COUNSELLING SERVICES

Rural counsellors provide advice and support on both financial and social issues. The NSW Government makes a 25 per cent contribution to local groups to help them qualify for the 50 per cent Commonwealth subsidy under the Rural Counselling Program. Eight local groups in the State's cropping area qualify. NSW Agriculture & Fisheries coordinated the distribution of the Government's annual allocation of $120 000.

REGULATED MARKETING UNIT

The Regulated Marketing Unit is responsible for administration of the Marketing of Primary Products (MPP) Act and the Farm Produce Act. It also assists producer groups with support and advice on the establishment and operation of their own marketing organizations.

MARKETING OF PRIMARY PRODUCTS ACT

There are currently eleven marketing boards and four marketing orders constituted under the MPP Act. All the marketing boards were the subject of review during the year and recommendations

on changes to their number and structure have been made to the Minister.

Three boards which have experienced financial difficulties, the Grain Sorghum, Oilseeds and Oats Marketing Boards are currently under the direction of an administrator. The Murray Valley Citrus Marketing Board is now amalgamated with the Citrus Board of Victoria, and the membership of the new combined board has been selected. The Sheep Meats and Yellow Maize Marketing Boards, and the Agricultural Marketing Finance Agency, which have been inactive for several years, are in the process of being dissolved.

Marketing orders established under the MPP Act, which enable the collection of levies from growers, are helping grower associations in the citrus, kiwifruit, and tomato industries to negotiate prices with processors and to undertake promotion programs. The Kiwifruit Marketing Committee recently launched a promotion program targeting schools in NSW. The Citrus Promotion Marketing Committee is preparing a marketing strategy.

Sweet-corn growers have asked for establishment of a marketing order and this proposal is being investigated.

FARM PRODUCE ACT

The Farm Produce Act requires all agents and merchants in NSW who deal directly with growers of fresh fruit and vegetables to be licensed and sets down the terms of trade and payment conditions that licensed sellers should use. Licensees must be indemnified against inability to pay grower returns. During the year 234 businesses remained licensed. Seventy complaints were received from growers against some of these businesses and four licensees were prosecuted. The Registrar of the Act took steps to call upon the indemnities of four licensed businesses, and one licensee was disqualified.

PRODUCER MARKETING GROUPS

Marketing advice was provided to several producer groups engaged in the process of forming marketing companies or co-operatives. Major activities included:

- advice to the NSW Egg Producers Co-operative which has become well established and is operating as a successful commercial venture.
- a detailed feasibility study for the Central West Pulse Producers Association which intends establishing a co-operative in September 1990.
- advice to South Coast oyster farmers where detailed business plans are being finalised for the formation of a co-operative in August, 1990.
- advice to clover seed producers from the Central West and Riverina who are developing business plans with a view to establishing a marketing company in late 1990.

AGRICULTURAL STATISTICS

The Central Statistics Unit (CSU) coordinates the collection, storage and dissemination of agricultural statistics within the Department. Activities undertaken included:

- production of a range of summary publications providing statistics for each departmental region as well as specific industries;
- preparatory work on introduction of an upgraded version of CSU News, a computerised news bulletin containing economic, market and statistical information; and
- collection and reporting of market prices and quantities of a range of products sold at Flemington Markets.

A comprehensive user survey on demand for the Flemington Market Reporting Service was used to make fundamental changes to the service addressing the issues of information accuracy and the need for more informative reports, disseminated by means better attuned to user's needs.

A substantially new service is scheduled to start in July 1990. Revised procedures will enable collection of far more accurate prices information together with a reliable indication of the spread of sales within an overall price range. This information will be combined with an assessment of produce clearance rates and more accurate information on daily produce receivals. Resultant reports will be made available directly to users, on a fee for service basis, through a mail service, a facsimile service and Telecom 0055 recorded telephone message services.

BIOMETRY

During 1989–90 the Biometrical Branch's capacity to provide an efficient service was boosted by the acquisition of new computer facilities. Provision of a high quality statistical consultancy service frequently involves the development or implementation of new statistical techniques and computer software. Highlights of the Branch's activities during 1989–90 included:

- developing methods of analysis for correlated discrete data such as disease ratings in field trials
- developing more accurate statistical analyses for small-plot field experiments, particularly plant breeding trials
- modelling the spread of invasive weeds
- developing software for industry-based initiatives such as LAMBPLAN and WOOLPLAN
- developing optimizing techniques for discriminating between positive and negative specimens in enzyme-linked immunosorbent assay (ELIZA)
- developing more accurate calibrations for estimating pasture biomass, soil moisture, etc.
- analysing the North Coast Creel Survey to estimate fishing pressure on the Clarence and Richmond rivers.

International recognition of the Branch's high standard is evidenced by an invitation to present its work on statistical analysis of plant breeding trials at the International Biometrical Conference.

OVERSEAS AGRICULTURAL DEVELOPMENT

The Australian International Development Assistance Bureau (AIDAB) has engaged the Department to implement and manage a major development assistance project in Indonesia.

The project, known as the Eastern Island Veterinary Services (EIVS) Project, will assist the Government of Indonesia to improve the supply of veterinary services to village livestock farmers by developing an integrated regional laboratory and field staff system. It will operate over a period of five years and has an estimated cost of $5 million.

NSW Agriculture & Fisheries is responsible for technical and management inputs which will involve 140 person months of long term veterinary and economic advisers, 56 person months of short term consultancies and 22 person months of management. All inputs are fully funded by AIDAB.

An additional contract was negotiated for provision of quarantine training to officers of the Government of Tonga. This project, which is also funded by AIDAB will involve 12 person months of short term consultancies over a period of three years.

One professional officer has been engaged as a consultant in Cambodia for one year and a technical officer is engaged in a veterinary laboratory in Indonesia for 18 months.

In addition to the above project related consultancies, specialists of the Department undertook 14 short term consultancies in Africa, Thailand Indonesia, Cambodia and the South Pacific. These consultancies were funded by AIDAB, the Australian Centre for International Agricultural Research and the United Nations Food and Agriculture Organisation.

Visitors to New South Wales. Training programs and itineraries were organised for 16 overseas scientists and technicians and meetings arranged for 62 official visitors from five countries.

Seventy officers undertook official overseas travel in 1989–90 to attend scientific conferences, present technical papers and exchange information on advances in agricultural technology. Ninety-seven percent of funds used for overseas study programs were provided by industry research funding organisations and other bodies.

A summary of overseas study travel follows:

- **D. B. Andrews,** Principal Livestock Officer (Beef Cattle), Japan, to participate in producers tour of Japanese beef industry.
- **K. D. Atkins,** Special Livestock Research Officer (Animal Genetics)—People's Republic of China, as a member of Review Team for ACIAR Sheep Breeding Projects in China.
- **B. Auld,** Principal Research Scientist—New Zealand, to chair session at International Conference on Alternatives to Chemical Control of Weeds—invited paper.
- **J. F. Ayres,** Senior Livestock Research Officer—Taiwan, to present paper at 5th Asian-Australasian Association of Animal Science Congress.

- **B. J. Ballantine,** Special Plant Pathologist—Syria, Switzerland, United Kingdom, USA and Mexico, to present papers at 3rd International Septaria Workshop and visit Research Centre.
- **P. Barkley,** Principal Research Scientist—Indonesia, to participate in Citrus Workshop.
- **P. Barkley,** Principal Research Scientist—USA, to present papers at 11th Conference of International Organisation of Citrus Virologists and attend FAO Workshop and study tour.
- **S. A. Barnett,** Livestock Officer (Dairying)—United Kingdom, as member of Rotary Group Study Exchange Program.
- **L. J. Barrow,** Foreman, Elizabeth Macarthur Agricultural Institute—New Zealand, to attend New Zealand National Agricultural Field Days.
- **G. D. Batten,** Research Scientist (Plant Chemistry)—United Kingdom, Netherlands, Germany, Belgium, Switzerland and Norway, to present a paper to International Plant Nutrition Conference and visit Agricultural Research Centres.
- **G. A. C. Beattie,** Senior Entomologist—Thailand and People's Republic of China, to negotiate and organise supply of predators for biological control of citrus pests.
- **J. Bell,** Research Scientist (Fish Biology)—France, to study research developments in commercial marine aquaculture.
- **A. G. Biggs,** Principal Horticulturist (Vegetables)—England, Scotland and Holland, to attend International Board Meeting of Plant Propagators Society and visit Research and Industry Centres.
- **M. H. Campbell,** Principal Research Scientist—New Zealand, to attend New Zealand Grassland Association Conference.
- **M. Casimir,** Director, Biological & Chemical Research Institute, Rydalmere—New Zealand, to attend Annual Meeting of Plant Health Committee.
- **D. Choquenot,** Livestock Research Officer (Vertebrate Pests)—Norway, to participate and present papers at XIX Congress of International Union of Game Biologists; France and United Kingdom, to visit Research Centres re vertebrate pest control and exotic disease control methods.
- **B. S. Dear,** Senior Research Agronomist—USSR, as member of Commonwealth Mission to establish protocol for exchange of plant germplasm.
- **F. Doughty,** Director of Animal Quarantine—France and United Kingdom, to inspect pre-embarkation quarantine facilities for horses travelling to Australia to take part in Tancred Stakes race and accompany horses on flight to Australia.
- **F. R. Doughty,** Director of Animal Quarantine—United Kingdom, to accompany shipment of horses on behalf of AQIS.
- **S. Edwards,** Livestock Research Officer—New Zealand, to attend 3rd International Workshop on Modelling Digestion and Metabolism in Farm Animals.
- **P. C. Fahy,** Senior Plant Pathologist—New Zealand, to compare bacterial identification methods.

- **N. W. Forrester,** Special Entomologist—USA, to present invited paper to opening session of International Pest Resistance Management Congress.
- **N. W. Forrester,** Special Entomologist—Thailand, to present papers to First Asia Pacific Conference of Entomology and visit cotton/vegetable areas.
- **J. Fowler,** District Agronomist—Philippines and USA, to study rice establishment, weed and pest control and technology transfer in rice production.
- **M. R. Gillings,** Research Scientist—USA, to visit Research Centres to study Virus Isolates.
- **A. C. Grice,** Research Agronomist (Rangelands)—USA and France, to attend XVI International Grasslands Congress and visit Rangeland Research Centres.
- **G. R. Griffith,** Senior Research Scientist—New Zealand, to assess market: supply forecast operations of New Zealand lamb industry in liaison with New Zealand MAAF & Meat/Wool Boards.
- **N. W. Griffith,** District Agronomist—New Zealand, to attend New Zealand Grassland Association Annual Conference and study pasture management.
- **G. D. Hamer,** Principal Officer (Commercial Marine Fisheries)—Mexico, to present paper at First International Symposium on Abalone Biology, Fisheries and Culture and USA, for discussions.
- **R. A. Hartley,** Senior Research Agronomist (Systems)—USA, United Kingdom and Philippines, to: (a) Study commercialisation of agricultural education; (b) Attend World Agricultural Expo. and (c) Study deer farming.
- **K. R. Helyar,** Senior Research Scientist (ACID Soils)—USA, to present keynotes address to 2nd International Symposium on Plant : Soil Interactions at Low pH and visit ACID Soil Research Centres.
- **D. F. Herridge,** Senior Research Scientist—Indonesia, Thailand and Philippines, for planning, implementation and review of collaborative ACIAR research on Nitrogen Fixation.
- **G. M. Higgs,** Senior Inspector, Export & Standards—Japan, for preclearance inspection of trial fruit (Nashi) shipment to Australia.
- **F. R. Higginson,** Director of Chemistry—California, USA, to present invited paper to International Symposium on Soil Testing and Plant analysis and visit Research Centres.
- **J. R. Hosking,** Entomologist—New Zealand, to assess feasibility of biological control of Scotch Broom.
- **R. D. Kearins,** Special Livestock Officer (Wool Production)—South Africa, to attend World Merino Conference and study development in sheep breeding and performance recording.
- **R. E. Kearney,** Director, Fisheries Research Institute—USA, to: (a) Present lecture at University of Washington and (b) Participate in World Meeting on Blue Fin Tuna in California.

- **R. E. Kearney,** Director of Fisheries Research Institute—Japan, to attend Trilateral Blue Fin Tuna Conference as Member of Commonwealth DPI & E Delegation.
- **E. J. Knights,** Senior Research Agronomist (Chickpeas Breeding)—India, to present paper at 2nd International Chickpea Workshop and undertake a study tour on research and genetic developments.
- **J. J. Lloyd,** Research Horticulturist—USA, to attend Annual Meeting of American Society of Horticultural Science.
- **M. C. Lucas,** District Agronomist (Tumut)—New Zealand, to undertake New Zealand Pasture Study Tour with commercial technologist.
- **D. J. Luckett,** Research Scientist (Tissue Culture)—Holland, Germany, Canada and USA, to present paper at International Congress on Plant Tree and Cell Culture and visit Research Centres.
- **R. W. Medd,** Special Research Agronomist—Finland, Denmark and The Netherlands, to present paper at International Symposium on Integrated Weed Management in Cereals and visit Research Centres.
- **H. Oddy,** Research Scientist—New Zealand, to attend 3rd International Workshop on Modelling Digestion and Metabolism in Farm Animals.
- **J. R. Oliver,** Cereal Chemist (Wheat)—Thailand, Malaysia and Singapore, to familiarise Australian cereal chemists with evaluation methodology of major SE Asian markets.
- **D. L. Peasley,** District Horticulturist—USA and Hawaii, to evaluate new coffee harvesting equipment with Brazilian specialist.
- **D. C. Pollock,** Research Agronomist—Philippines and USA, to study rice establishment, weed and pest control and technology transfer in rice production.
- **R. J. Roughley,** Principal Research Scientist—Philippines, to review ACIAR Project on Nitrogen Fixation.
- **K. W. Ryall,** Advisory Officer (Education)—New Zealand, USA, United Kingdom and Holland, to attend participative Training Techniques Workshop and visits to educational establishments to study innovative education techniques.
- **G. K. Seymour,** District Horticulturist (Vegetables)—New Zealand, to present paper at South Pacific Horticulture Conference and study Hydroponics.
- **R. F. Sheldrake,** Senior Research Scientist—England and Europe, to attend International Veterinary Conferences and visit Research Institutes.
- **P. G. Slavich,** Chemist (Soils)—P.R. China, to attend International symposium on Dynamics of salt affected soils.
- **I. A. Southwell,** Senior Research Scientist—Nepal, to participate in Essential Oils Workshop and India, to attend Congress of Essential Oils.

- **R. W. Taylor,** Dairy Trade Apprentice—New Zealand, for Special Leave—Study Tour associated with Dairy Apprentice Course.
- **D. T. Vere,** Special Economist—New Zealand, to assess market: supply forecast operations of New Zealand lamb industry in liaison with New Zealand MAAF & Meat/Wool Boards.
- **R. W. Watson,** District Agronomist (Scone)—New Zealand, to undertake New Zealand Pasture Study Tour with commercial technologists.
- **A. Yeates,** Livestock Officer (Beef/Sheep)—New Zealand, to participate on panel and present talk at 'Beef Breeding Technology' Field Day and discuss NSW research results.

11 Livestock Advisory and Research Officers attended the 8th Conference of the Australian Society of Animal Breeding and Genetics in New Zealand.

EDUCATION

COLLEGES

The Department's two colleges are unique in Australia in that they provide full-time residential courses, on the College farms, with trained educators as lecturers. Sited in the Riverina, at Yanco, and in the Hunter Valley, at Paterson, they draw on students from both north and south of the State. C. B. Alexander Agricultural College (Tocal) and Murrumbidgee College of Agriculture are continuing to provide practical skills in whole-farm management to intending and practising farmers.

Enrolments. Both colleges attracted a full complement of students using an extensive and ongoing advertising campaign. Murrumbidgee's Rural Traineeship course and C. B. Alexander College's Dairy Apprenticeship course offered other avenues of study for young people, unable to attend full-time courses.

Course development. The Colleges use the services of the educational consultancy firm, Certain Learning, to ensure that courses are relevant to both rural industry and students. The company's reports indicated that courses are meeting the requirements of both participants and market.

Murrumbidgee College began developing a new course, Pastoral Property Management. A section of this course, Station Water Supply, has already been introduced for Advanced Certificate students. Students involved in the sections of the Pastoral Property Management course already operating are given opportunities for work experience on properties in the Cobar, Wentworth and Broken Hill districts.

Farms skills programs developed for aboriginal managers and workers were an outstanding success. Training courses usually lose participants as they progress, but these gained numbers each day, indicating their high relevance and acceptance by the local community.

Murrumbidgee College was one of only a very small number of TAFE level colleges where rural traineeships were started. This training scheme is now in its second year of operation, and all indications are that it continues to provide an important training opportunity for both employees and employers.

Cooperating with farmers. Many of the College programs rely on the assistance of cooperating farmers to provide venues for off-campus education. The students at each College spent from two to four weeks working on farms, the period depending on the course being undertaken. As well, students were involved in showing cattle at country shows and the Royal Easter Show, learning by experience the finer points of stud cattle breeding.

Home study courses and short courses. A major new resource developed for home study clients was the 'Beekeeping' unit, a series of informative booklets for both the dedicated hobbyist and the professional apiarist. From the moment of its release this resource was in demand, and it showed the benefit of thorough market research before production commenced. As part of the course development process, a major review of all the home study units was started to bring all the information up to one high standard. In addition, the Commonwealth Bank became a major sponsor of courses designed to educate senior bank personnel on the complexities of funding rural enterprises.

The short course centre at Murrumbidgee College reached full utilisation with the appointment of a Manager for the short course programs, and 220 courses were run for more than 3000 clients. Several of the courses were run off-campus, and these included understanding computers and farm business management. Additionally, a grant from the Commonwealth government funded a series of courses for women on farms, based around training local coordinators who then presented courses in their own districts.

Resources. Murrumbidgee College received financial assistance from the Department of Industrial Relations & Employment and the Commonwealth Department of Employment, Education & Training to buy farm equipment, including tractors, motor bikes, a horticulture spray unit and a UHF communication network. This equipment will allow the continued expansion of courses and the introduction of new areas of study, such as pastoral property management and horticulture.

A new irrigation system for the dairy at C. B. Alexander College was installed, funded by the Department of Employment, Education & Training. It comprised two low pressure travelling boom irrigators that will irrigate 15 hectares of pastures and crop, and help produce feed for the 90-cow herd. The system replaced a 25-year-old hand-shift system.

Farm report. Murrumbidgee College won the champion pen of three carcases at the inaugural RAS and NSW Agriculture & Fisheries steer show at Holbrook. C. B. Alexander College consolidated its beef cross-breeding program around Herefords crossed with Brahman bulls for a crossbred F1 that is then crossed with an Angus. This combination appears to be the best for the College's physical environment as well as the market it services.

GROUP ACTIVITIES UNIT

The Group Activities Unit provides the secretariat for two rural educational organisations—the Agricultural Bureau of New South Wales Inc., and the Rural Youth Organisation of New South Wales Inc.

Agricultural Bureau of New South Wales Inc. The Agricultural Bureau is a statewide organisation of farmers and other rural people who are interested in agricultural and rural interests. It was founded in 1910 by the then Department of Agriculture to disseminate agricultural information and to organise agricultural activities in rural areas to the mutual benefit of departmental advisers and Bureau members. This is still the main purpose of the Bureau.

Membership for 1989–90 totalled 1800 members in 47 Branches, which is a 14% increase on the 1988–89 membership.

The State Executive for 1989–90 consisted of: President, Robert Schofield; Vice-President, Bryan McKenzie; Secretary, Kelvin Ireland; and, Treasurer, Beryl Ingold.

Programs concluded during the year included the Annual Conference at West Wyalong, the Murrumbateman Field Days, and a very successful representation at the Department's Agview 90.

The Department provides $7500 toward the cost of travel and accommodation for members of the Executive Council when they attend council meetings. A grant of $1200 is also made to the Bureau to help run the Annual Conference.

Rural Youth Organisation of New South Wales Inc. The Rural Youth Organisation is an organisation for young people, generally in small rural communities, who are interested in the land, the farm, the home, and the rural community. The Organisation aims to make young people self-reliant, responsible and effective citizens in their community. A large part of Rural Youth activity is on rural and agricultural topics.

Membership for 1989 was 1141 members in 49 Rural Youth Clubs throughout New South Wales which is a slight increase on the 1988 membership, but with one fewer club.

Over 600 activities were held during the year with a total attendance of about 22 000 people. During the year, seven Financial Management Courses were conducted (at Lismore, Casino, Raleigh, Tamworth, Bega, Griffith, and Murrumbateman), attended by over 300 Rural Youth members, farmers, and local business people. Funding was provided by the Department of Primary Industry and the Reserve Bank.

The Rural Youth Organisation is self-sufficient in its funding and receives no direct financial assistance from NSW Agriculture & Fisheries.

COMMUNICATIONS

PUBLICATIONS & INFORMATION

The department maintained its position as the largest provider of agricultural and fisheries information in NSW.

Publications. Recommendations from the review of publications and displays carried out in 1988–89 were implemented. Included were the formation of a Fishfacts series as a companion to the high quality Agfacts series, which continues to provide practical technical information to the State's farmers and home gardeners; new Agnotes and Fishnotes series, which regions and divisions use to disseminate more local information; the selection of a joint venture partner to market Agfacts and Fishfacts by mail and subscription; the appointment of an advertising representative to seek advertisements and sponsorship for departmental publications; and a major program was started to reduce the number of Agfact titles from more than 1400 to less than half by amalgamating titles on similar subjects. These changes will result in faster and more widely distributed information, and lower costs to government.

A special edition of *The Agricultural Gazette*, which was published continuously by the department from 1890 to 1982, was produced to mark our centenary. The *Gazette* contains highlights of our first 100 years printed using turn-of-the-century designs, typefaces, paper stocks and even binding methods.

The Goat Manual, an updateable reference book for goat producers, was produced. It contains the most up-to-date material available in Australia on goat breeding, breeds, management, health care, yards, fencing and other important information in loose-leaf format.

There were substantial disruptions, particularly with Agfact subscriptions, following the closure of the Government Printing Office in July 1989. This was short-lived, however, and the department's publications staff quickly took over nearly all tasks formerly carried out for us by the Office. Cost savings to date include about $50 000 on the printing of Agfacts and $60 000 on typesetting.

The number of titles in the Agfacts series of high quality leaflets for primary producers and home gardeners rose from 1336 in July 1989 to 1423 in June 1990. A further 42 titles were revised, and 36 were reprinted.

Sales. Sales of publications fell from $284 037 in 1988–89 to $247 585 in 1989–90. This total comprised $65 732 from Agfacts, $52 640 from Agfact subscriptions and $59 663 from other books and posters. Total stock movements from Commonwealth-funded publications was $65 550.

Displays. The department won first prize for the second consecutive year in the Primary Industry & Horticultural display section at the Royal Easter Show. Our 1990 display theme was 'A Century of Service', depicting the changes in agriculture and the department over the last century.

Major displays were also mounted at Agview 90, AgQuip, the Orange National Field Days. The department's travelling display,

Publications and media output for 1988–89*

	Reg 1	Reg 2	Reg 3	Reg 4	Reg 5	HO†	TOTAL
1. Original press releases	513	1184	756	1239	977	369	5038
2. Original radio broadcasts	250	748	347	1101	699	214	3359
3. Video tapes produced	2	8	15	22	22	12	81
4. Original TV programs	49	96	80	136	195	50	606
5. Agfacts						165	165
6. Information sheets produced for public	108	142	49	68	115	49	531
7. Regional/district bulletins	6	66	40	46	5	51	214
8. No. of newsletters currently published	9	27	7	8	7	30	88
9. Newsletter editions produced for public	32	110	19	52	29	31	273
10. Contributions to newsletters	274	597	209	335	288	205	1908
11. Display boards produced for public	38	35	57	74	40	129	373
12. Scientific bulletins produced by department	5	11	0	9	2	27	54
13. Scientific papers published in non-departmental journals	26	71	17	30	45	115	304
14. Scientific notes published in non-departmental journals	1	17	4	7	8	28	65
15. Books, book chapters and post-graduate theses	9	29	8	27	11	21	566
16. Contributions to regular proceedings of societies and to ad hoc conferences, committees, workshops and schools	63	131	40	66	113	153	566

* *Statistics for previous year are now used because of cost of collection in time to meet this Report's publishing deadlines.*

† *Head Office and statewide establishments.*

featuring relevant statewide, regional and district information, visited country shows and other rural events.

LIBRARY NETWORK

Eleven staffed libraries continue to provide information services. The newest technology development is the increasing availability of databases on CD-ROM. This new technology provides better information access using more powerful and more flexible searching software than is available on on-line systems, but it does not require expensive data communication links. The network's book catalogue, CLANN CD-CAT, is the first library database to be put on CD-ROM in Australia. Other databases used are Agricola (USDA), *Medline*, and *Aquatic Sciences and Fisheries Abstracts*, which usually consist of a set of discs for back runs and a current disc that is completely updated quarterly.

All of the department's literature received by the central library was listed on the national database Australian Bibliography of

Agriculture (ABOA) — not yet listed on CD-ROM — and more than 2000 entries were listed this financial year.

The department bought 5637 books and journals (representing 5157 titles) at a total cost of $400 000. Another 3500 book entries were added to the catalogue CLANN CD-CAT.

PRIMARY PRODUCTS PROMOTIONS UNIT

The Primary Products Promotions Unit (PPPU) is an important communications link between producers, agents, retailers and consumers.

The philosophy of 'Fresh is Best', strongly supported by the Unit, reinforces the health and nutrition messages of major Australian health organisations. Consumer awareness of good nutrition and healthy eating boosts consumption of fresh foods while increasing sales of primary produce.

By targeting both consumers and the hospitality and education industries, we are 'educating the educators' to relay our aims and objectives further afield.

Media promotions. A four part video series entitled 'Farm Kitchen' was produced in conjunction with the department's Region 3 Video Production Unit. The series, a pilot exercise designed for use in the outer regions, covered the four seasons with appropriate seasonal menus being demonstrated for each while including general information about seasonal produce.

The videos were intended for release to NSW country television stations in November 1989, February 1990, May 1990 and September 1990.

A television segment for Anne's International Kitchen was filmed with Anne Luciano on SBS Television. It covered Italian cookery, and featured mediterranean-style vegetables such as eggplant, capsicum and artichokes.

The 'Fresh Talk' column continued to be published fortnightly in the magazine section of The Land newspaper. The PPPU also acted as a resource file to supply information on specific produce to food and media writers for use in newspapers, magazines, radio and television; and it coordinated promotion of seasonal produce with television food presenters such as Peter Howard on the Ray Martin Show.

Regular and occasional radio interviews for both country and metropolitan radio were conducted on subjects including buying, storing, preparing and the nutrition of seasonal produce.

Educational promotion. The PPPU was heavily involved with Agview 90, and was responsible for coordinating the Good Food Hall with exhibits, demonstrations and food samples from 17 industry exhibitors. Exhibits ranging from bread, dairy, beef, lamb, pork, seafood, fruits and vegetables, through to wines.

'Fresh is Best' promotional demonstrations were given at various field days and shows, including the Royal Easter Show and other departmental shows and field days at Orange, Tocal, Mudgee, Tamworth and Gunnedah Ag-Quip.

The Fine Food Fair at Darling Harbour was supported with a joint promotion with the Sydney Market Authority.

Nutrition Week was supported with a display featuring the Healthy Diet Pyramid model in the ground floor foyer of the McKell Building.

Lecture demonstrations/updates on 'Fresh is Best', promoting healthy eating, nutrition and increased consumption of fruit and vegetables were presented to about 150 employees of Telecom over two days; to first-year home economics trainee teachers at Sydney University over 3 days; and to home economics students at TAFE colleges throughout Sydney.

Grower, agent, retailer and consumer liaison. The PPPU was involved with the Sydney Market Authority in preliminary and final judging of NSW small–medium storeholders at the Batlow Apple Display Competition.

Recipe development and testing was conducted for specific grower groups including coconuts, rambutan and fuji fruit in addition to general recipe development for promotional use.

The PPPU continued to be involved in testing potato varieties for departmental potato trials.

The 'Fresh Food Line' dial-it telephone promotion was updated weekly.

LEGAL BRANCH

The Legal Branch provides legal advice and administrative support to the Minister and senior executives of the Department on a wide range of matters including legislation and legislative proposals. The Branch also assists in the preparation of prosecution cases and appeals, represents the Department where required and conducts legal training courses for inspectors operating under the various Acts under the administration of the Minister for Agriculture and Rural Affairs.

ENVIRONMENTAL ISSUES

A private citizen took action, in the Land and Environment Court, against a local council which had been using 2,4-D spray to control groundsel. The Department sought the intervention of the Attorney–General, and assistance was given to the council in defending the case. The Department's view was that a decision against the council would restrict the use of 2,4-D in weed suppression by local authorities.

Judgment was handed down in November 1989 in favour of the council.

Stock Inspectors being trained in Courtroom procedures in Wellington Courthouse.

LEGAL TRAINING

The Branch provided legal training courses to agricultural, apiary, plant diseases and stock inspectors employed by the Department; and veterinary, stock and noxious animals inspectors employed by Pastures Protection Boards. The three stage courses are designed to give inspectors a clear understanding of their powers under the various laws, and to familiarise them with interviewing and court procedures. Certificates are presented by the Chief Legal Officer to inspectors who satisfactorily complete all three stages.

PROSECUTIONS

The Department prepared 164 summonses for offences committed under various Acts; in particular the Stock Diseases Act, the Plant Diseases Act, the Pesticides Act and Farm Produce Act.

APPEALS

The Department assisted in the defence of appeals to the District Court under the Fisheries and Oyster Farms Act 1935 against decisions not to issue or renew commercial fishermen's licences and boat licences. Judgements handed down in these appeals are of particular relevance to the Department's administration of the Act and will greatly assist in the proposed review of the Act.

COMMITTEES

Officers of the Legal Branch chair arbitration committees to hear disputes under the Agricultural Holdings Act 1941. 2 notices of dispute were received.

The Legal Branch participated in a Committee of Review which reported to the Government on proposals to modernise and streamline the Agricultural Holdings Act. New legislation—the Agricultural Tenancies Bill—was before the Parliament at the end of the year.

The Branch also provided a chairman for the Veterinary Surgeons Investigation Committee, which meets on a monthly basis to consider complaints about the actions of veterinary surgeons. The Committee is constituted under The Veterinary Surgeons Act 1986.

SUMMARY OF LEGISLATIVE MATTERS

Legal Branch prepared 52 Appointments, 26 Proclamations, 31 Regulations, 23 Notifications and Orders and miscellaneous notices for gazettal under Acts administered by the Department.

Main Acts administered by the Department are set out below:

COMMONWEALTH ACTS

Quarantine Act 1908
Export Control Act 1982
Fisheries Act 1952

STATE ACTS

Agricultural Holdings Act 1941
Agricultural Scientific Collections Trust Act 1983
Apiaries Act 1985
Banana Industry Act 1987
Biological Control Act 1985
Canned Fruits Marketing Act 1979
Cattle Compensation Act 1951
Dairy Industry Act 1979
Dried Fruits Act 1939
Egg Industry (Repeal and Deregulation) Act 1989

Farm Produce Act 1983
Fertilisers Act 1985
Fisheries and Oyster Farms Act 1935
Horticultural Stock and Nurseries Act 1969
Marketing of Primary Products Act 1983
Meat Industry Act 1978
Non-Indigenous Animals Act 1987
*Noxious Insects Act 1934
*Pastures Protection Act 1934
Pesticides Act 1978
Plant Diseases Act 1924
Potato Growers Licensing Act 1940
Poultry Meat Industry Act 1986
Poultry Processing Act 1969
Prickly Pear Act 1987
*Registration of Stock Brands Act 1921
Rural Assistance Act 1989
**Rural Lands Protection Act 1989
Seeds Act 1982
Stock (Artificial Breeding) Act 1985
Stock (Chemical Residues) Act 1975
Stock Diseases Act 1923
**Stock Medicines Act 1989
**Stock Foods Act 1940
Swine Compensation Act 1928
Sydney Market Authority Act 1968
Tobacco Leaf Stabilisation Act 1967
Veterinary Surgeons Act 1986
Wheat Marketing Act 1989
Wine Grape Processing Industry Act 1979

** to be repealed by the Rural Lands Protection Act 1989, with effect from 1 July 1990*
*** to commence 1 July 1990*

NEW LEGISLATION AND AMENDMENTS TO LEGISLATION

The following legislation was passed during the year:

Fisheries and Oyster Farms (Advisory Council) Amendment Act 1989.

The amendments established the Commercial Fishing Advisory Council as the official body representing commercial fisherman in New South Wales

Murray Valley Citrus Marketing Act 1989

This is a new Act which provided for a joint New South Wales/Victorian scheme for marketing citrus fruit grown in the Murray Valley

Pesticides Act 1978 (formerly the Pesticides and Allied Chemicals Act 1978)

Cognate with the Stock Medicines Act 1989, the Pesticides Act was amended to give effect to a national scheme for clearance of pesticides and other agricultural and veterinary chemical products for use in participating States and Territories, including New South Wales.

Stock Medicines Act 1989

The Act revised the Stock Foods and Medicines Act 1940 to provide that a stock medicine shall not be registered unless a certificate of clearance has been granted under the Commonwealth's Agriculture and Veterinary Chemicals Act. It also included control of use, distribution and seizure provisions similar to those in the Pesticides Act 1978, updated penalties for offences and provided additional offences consistent with the controls over use of stock medicines.

Rural Lands Protection Act 1989

A new Act which will take effect on 1 July 1990. It overtakes the provisions of, and therefore repeals the following Acts:

Pastures Protection Act 1934
Registration of Stock Brands Act 1921
Noxious Insects Act 1934

It provides for the protection of rural lands and for the constitution and functions of rural lands protection boards; it makes fresh provisions for the establishment and management of travelling stock reserves; it regulates the identification of stock; and it provides for the registration of brands and earmarks.

Egg Industry (Repeal and Deregulation) Act 1989

This Act deregulated the egg industry and paid out quota holders.

Stock Diseases (Offences) Amendment Act 1989

This Act increased penalties for introducing diseased stock into New South Wales.

Minor legislative amendments were included in Statute Law (Miscellaneous Provisions) Acts.

ENVIRONMENT PROTECTION

LAND RESOURCES

The Department is responding to a wide range of environmental issues which are affecting agriculture. Foremost is the need to adopt appropriate planning mechanisms to control the generation of social conflicts in the commercial farming areas of New South Wales. The Department continued to promote to local councils the adoption of planning measures which encourage flexibility for farm adjustment, maintain the agricultural base of the shire and limit the potential for social conflicts.

A number of local councils have recently adopted modern planning instruments which aim to achieve these objectives.

Further contributions to environmental matters have been made by the Department in helping the development of guidelines for intensive industries, the preparation of a discussion paper on the greenhouse effect and the involvement of departmental officers on a number of working parties on key land resource and

environmental issues (such as recycling sewage sludge, residential development in the Sydney Region, buffer zones for pesticide application, and various catchment management committees).

The Department is preparing a conservation strategy which will address many of these matters.

Determinations under the Mining Act. The Department's involvement in the determination of 'agricultural land' objectives under the Mining Act was reduced with the gazettal of the Mining (Access to Lands) Amendment Act 1989. The Act enables negotiated access agreements to land in New South Wales for mineral exploration. Objections to mining and mining leases will continue to be determined in the usual manner.

Mapping Program. The atlas for the Agricultural Land Classification of the Murray Riparian Strip NSW was published, and it will provide local councils with valuable data for this area of competing land-use demands. Mapping using Landsat imagery was completed for Lachlan, Wedder, Forbes and Grenfell Shires.

RECYCLING

Sewage Sludge: In co-operation with the State Pollution Control Commission, Department of Water Resources, Water Board and Department of Health, NSW Agriculture & Fisheries has produced "Guidelines for the Use of Sewage Sludge on Agricultural Land".

Land application of sewage sludge represents one of the most cost effective and environmentally acceptable methods of disposal. More importantly, it allows the recycling of organic matter and nutrients contained in the sludge back to the soil.

But sludges from major cities also contain a range of undesirable contaminants and there is general concern about the danger of pathogens, heavy metals and toxic organic chemicals to both man and animals. Research results showed that these problems can be effectively controlled by appropriate selection, not only of sludge quality and rate but also sites, soil types, plant species, soil amendments and agricultural practices.

Chemical Drums: NSW Agriculture & Fisheries has encouraged and endorsed industry initiatives regarding the recycling of agricultural chemical drums and/or pesticide containers used by farmers and industry workers such as agricultural spray contractors.

Paper Recycling: The Department also undertakes recycling of waste paper and purchase of recycled paper products at numerous locations.

HUMAN RESOURCES

RELOCATION TO ORANGE

A main area of focus for personnel management was the introduction of strategies for the relocation of Head Office staff to Orange by December 1991. Key strategies included staff counselling, bus trips to Orange and information days. Staff are also kept informed of the relocation progress by way of an information brochure, "The Road to Orange" and by advice from appropriate Divisional Managers who attend regular Relocation Committee meetings. A comprehensive survey to identify and overcome problems in the relocation of staff was arranged using the consultants Price Waterhouse Urwick. Staff partners, already employed in the public service, are being assisted to transfer to the Department if they have the necessary skills or experience. Staff unable to relocate to Orange are being given assistance to find suitable positions in other government departments.

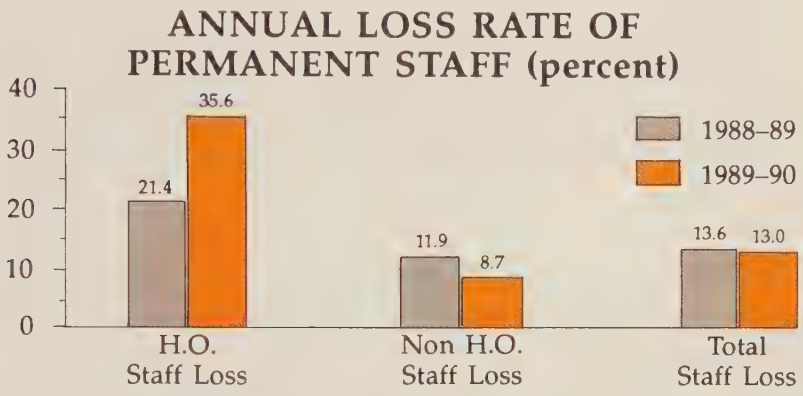
Total staff numbers increased by 2.25 percent from 3438 in 1988–89 to 3515 in 1989–90.The rise in total permanents from 2792 to 3053 included a large number of Board of Tick Control staff who were previously Ministerial staff.

STAFF STATISTICS as at 30 June 1990

	Regions							
	1	*2*	*3*	*4*	*5*	*M**	*HO***	**TOTALS*
STAFF OCCUPYING ESTABLISHED POSITIONS								
Plant Industries	129	283	68	155	280	312	68	1305
Animal Production Services	87	83	81	93	57	29	31	461
Animal Health Services	123	47	12	23	25	112	55	357
Fish Industries	38	50	5	24	17	103	54	291
Administration and Support Services	51	101	35	48	78	3	283	599
SUB TOTALS	438	564	201	343	457	559	491	3053
EMPLOYMENT SCHEMES								
Program								
Australian Traineeship System	11	11	1	1	12	15		51
Indentured Apprentices	4	8	1	1	8	0		22
National Employment Strategy for Aboriginals/Training for Aboriginals	2	2	0	2	3	0		9
Disabled Apprenticeship Scheme	0	2	0	0	0	1		3
SUB TOTALS	17	23	2	4	23	16		85
Temporary employees not occupying established positions	73	135	12	23	61	44		348
Ministerial employees	6	17	5	0	1	0		29
SUB TOTALS	79	152	17	23	62	44		377
TOTALS	534	739	220	370	542	1110		3515

* *M = Metropolitan offices*
** *HO = Head office*

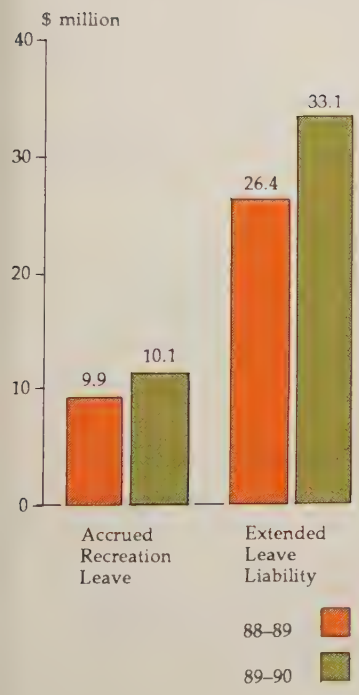
Overall loss rate of permanent staff actually fell during 1989–90 from 13.6 per cent in 1988–89 (380 departures from 2792 total permanents) to 13.0 per cent (398 from 3053 total permanents). This result was achieved despite a sharp increase in the annual loss rate of head office staff from 21.4 per cent (105 out of 491 positions) in 1988–89 to 35.6 per cent (131 out of 491 positions) during the October 1989 to June 1990 period following the announcement to relocate to Orange. These losses were more than offset by a decline in the loss rate of country based staff from 11.9 per cent to only 8.7 per cent.



The Division of Administration responded positively to this situation by implementing a number of innovative and highly successful recruitment strategies such as canvassing the metropolitan and country, private and public sector labour market for expressions of interest from people wanting to join the Department, by liaising with various government and local government agencies in the Orange district and conducting base grade entry examinations at Orange for Head Office positions. As a result the Division now has a growing pool of staff committed to moving to Orange which will ensure the effective operation of Head Office services during and after the relocation.

The Senior Executive Service (S.E.S.) was implemented in October as part of the government's structural and microeconomic reform program to improve the performance of the New South Wales public sector. The S.E.S. establishes contract based employment and flexible renumeration arrangements linked to performance reviews. The Department's 23 S.E.S. officers have established performance contracts directly linked to the Department's strategic planning initiatives. Coopers and Lybrand were contracted to conduct a comprehensive review of S.E.S. packages to ensure that they were properly and accurately introduced.

The 1990 EEO Resurvey was completed in May. Personnel Branch officers travelled to main regional, institute and divisional locations to administer the survey which received an 80 percent response rate.



Liability for leave accrued

The Departments' liability for accrued leave entitlements as at 30 June 1990 was estimated to be $10 119 074 in annual recreation leave for all staff plus $33 065 000 in extended leave for employees with over five years service.

These represent increases of approximately 2.0 and 25.3 per cent respectively on 1988–1989.

SENIOR EXECUTIVE SERVICE STAFF CHANGES

Mr K. F. Quince was appointed Chief, Division of Administration, Dr D. Saville was appointed Director, Sustainable Agriculture & Fisheries and Mr R. Dudley was appointed Director of Communications.

SPECIAL EMPLOYMENT SCHEMES

Australian Traineeship System (ATS) is aimed at providing training opportunities to unemployed youth (with some disabilities) through a concurrent formal course at TAFE colleges and on-the-job experience with the Department. The Department's 1990 intake under ATS was 51 people.

National Employment Scheme for aboriginals (NESA) and training for aboriginal persons (TAP)

The Department employs 9 aboriginal people under these schemes, eight apprentices and one field assistant. Agreements are held between the Department of Employment, Education and Training and the Department. Claims for reimbursement of salaries are made through the Commonwealth Employment Service.

The Department has also agreed to participate in the NSW Aboriginal Employment Strategy with the Department of Industrial Relations and Employment. This four year strategy begins in 1990 and aims for two percent aboriginal representation in administrative, clerical, technical and professional positions.

Apprenticeships

The Department employs 22 indentured apprentices and eight apprentices under the National Employment Scheme for Aboriginals (NESA). Apprentices are trained in such trades as gardening, motor trades, electrical fitter mechanic, dairying, carpentry, welding, painting and cookery. Indentures are held between the apprentice, the Department and the Department of Industrial Relations and Employment's Apprenticeship Directorate.

Apprenticeships for persons with a disability

The Department continued to support this program which is a fully subsidised apprenticeship program designed to provide vocational training for people with disabilities. Three apprentices are employed under this scheme.

At the conference opening Wendy Morrison, Manager (Management and Staff Developement), Phil Small, Executive Director (Administration) and Phil Anquetil, Personal Assistant to the Director–General.

MANAGEMENT AND STAFF DEVELOPMENT

The training function of the Division of Agricultural Services was transferred to the Division of Administration to facilitate the co-ordination of training across the Department.

The second and third Senior Management Development Programs were launched by the Hon. Ian Armstrong MP, Minister for Agriculture and Rural Affairs at conferences held at the Hotel Resort Macquarie, North Ryde in March and June. An outstanding

The Hon. Ian Armstrong OBE MP, Minister for Agriculture and Rural Affairs opening the Second Senior Management Developement Program.

Syndicate groups at work at the conference.

array of senior and authoritative people from both the private and public arenas shared their views and experiences on senior management and ensured that seventy senior managers and a number of selected representatives of rural industry organisations received high quality presentations.

Emphasis on cogent training activities of the Senior Management Development Program continued and included Skills in Appraising Staff Performance, Managing the Media and Developing a Business Approach to Management. This training is in line with the Department's commitment to develop its senior managers to increase the efficiency, effectiveness and commercial orientation of the organisation.

A review of the existing performance appraisal system for research and advisory leaders and the introduction of training workshops was undertaken by the consultants Cullen Egan Dell Limited. The review involved full participation of all relevant staff with structured interviews of senior managers and a survey of over 700 staff.

Funding was received from the NSW Education and Training Foundation to begin a program of management training for rural industry leaders. This Departmental initiative involves a joint undertaking between NSW Farmers' Association and the University of New England-Orange Agricultural College to conduct a two module training program in July and September 1990. It is a significant contribution toward fulfilling the policy commitment of the Minister for Agriculture and Rural Affairs to provide a mechanism for training of present and future leaders of rural industry organisations in management skills.

In addition a variety of highly pertinent workshops were conducted to enhance the skills of divisional, institute and regional staff.

Among the highlights of the year were five workshops on the principles of adult education and behaviour change, planned by the Training Steering Committee.

Ten half-day workshops on submission writing attracted 124 researchers.

INDUSTRIAL RELATIONS

A significant advance in implementing the Structural Efficiency Principle was the development of a strategy to consolidate the Department's multiple classification structures into five structures; professional, field services, technical, regulatory and administrative and clerical.

Five working parties comprising managerial and staff representatives were set up to develop the proposed structures. The Department has actively encouraged staff involvement in the development of these proposals and has received the full endorsement from relevant unions in the negotiations.

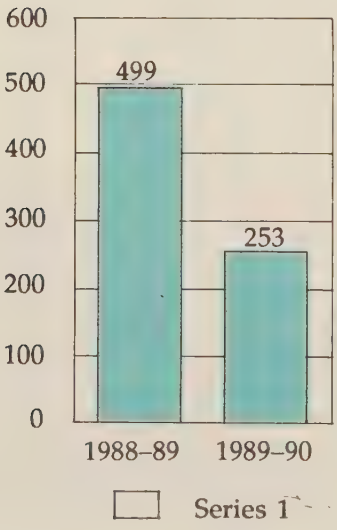
134 ministerial employees of the Board of Tick Control were made permanent under the provisions of the Public Sector Management Act 1988.

Existing provisions relating to the Transferred Officer's Award and to accommodation at remote sites etc were reviewed with recommendations for change forwarded to Central Agencies.

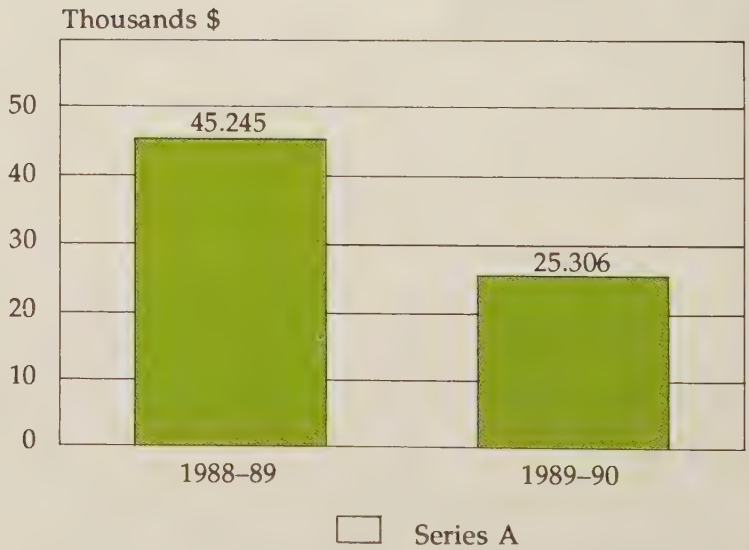
OCCUPATIONAL HEALTH AND SAFETY

Details provided by the Government Insurance Office for 1989–90 indicate that our concerted efforts have resulted in a significant reduction in both the number of workers' compensation claims and their costs. A steady reduction in workers' compensation is also evident between 1985 and 1990.

DAYS LOST PER 100 STAFF 1988–89 TO 1989–90



COST PER 100 STAFF 1988–89 TO 1989–90



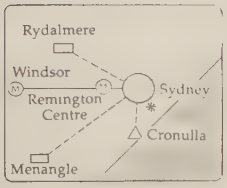
Thirteen training workshops in areas such as hazard management, pesticide usage, safeguarding of machinery, fire fighting, lifting and back care, first aid and safety committee training and twenty eight safety audits were conducted at regional and metropolitan locations.

COMPUTERISED INFORMATION SERVICES

The Statewide Computer Network (AGNET) was enhanced and a number of major initiatives were undertaken which will give a clearer direction for the future. These include:

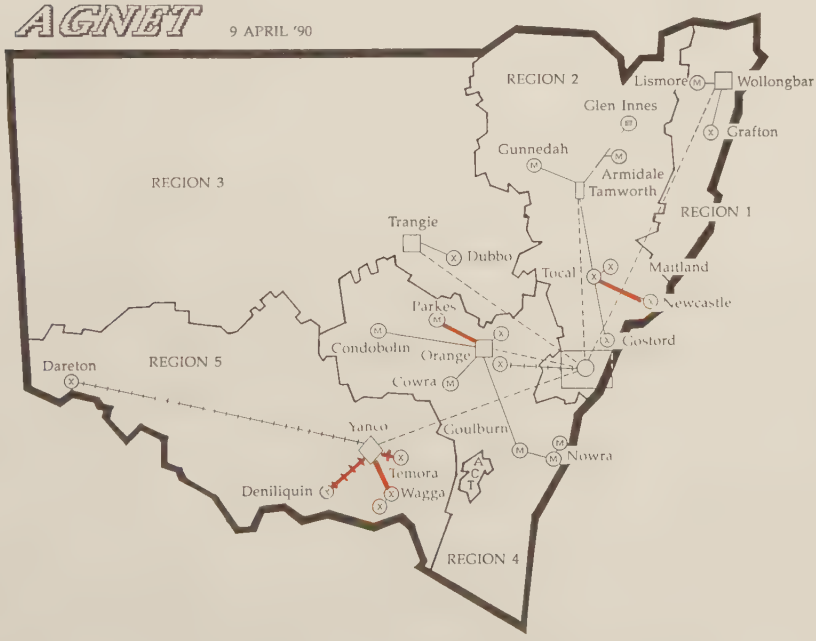
- Purchase of IBM compatible microcomputers including laptops.
- Purchase of hard disk drives to increase the disk space on the PRIME Minicomputers at Wollongbar, Trangie, Orange and Yanco.
- Connection of Newcastle office to the Computer Network.
- Upgrading the Data Communications at Dubbo and on the line from Sydney to Gosford, Maitland and Tamworth.
- Computer cabling installed at the interim Head Office accommodation at Bloomfield, Orange was connected to the Department's Computer Network via an AUSPAC line. This will be switched to the Department's new building when it is completed.
- Installation of Uninterruptable Power Supplies, including some lightning protection, at the Wollongbar, Tamworth, Trangie, Orange, Yanco, Cronulla and Head Office.

TITLE: AGNET NETWORK



LEGEND

Austpac line
DDS line
Datel line
PRIME 2755
PRIME 6350
PRIME 4150
PRIME 9955
PRIME 9755
PRIME 2655
PRIME 4050
User sites
Multiplexer
X.25
New lines installed 1989–90



Other major initatives during the year included:

- The purchase of eleven (11) SUN Workstations for use by the Biometricians in the Regions and Institutes. UNIX-based Systems will continue to take a higher profile in the coming years.
- The establishment of standard software for microcomputers. This covers database, spreadsheet, general graphics, scientific graphics and a front-end Menu System.

- An increased emphasis on user support and training which includes two additional computer training officers, one additional microsupport position in Computer Services Branch and in each Region. A comprehensive training program provided training for over 1000 staff through the 125 training courses that were conducted during 1989–90.
- The need for standards has been identified as a high priority. Specialised Systems Development courses have been run for all Computer Staff in the Department which has ensured a common approach to Systems Analysis and Design.
- The development of an interface between the microcomputer database ADVANCE REVELATION and the PRIME INFORMATION database.

Since that time the number has increased greatly, as have the number of users who receive support and advice from the Micro Support Section.

A review of current strategies to ensure the efficient, economic and most effective use of our computer hardware has also commenced and will become an integral part of the monthly performance reviews.

The Information Systems Unit was established to service the management information needs of the Executive, develop a Strategic Plan for computers and information services, integrate information and information systems within the Department, and investigate problems in systems development. The unit has a staff of six, including officers temporarily assigned from elsewhere in the Department to handle specific projects. In addition, the Unit has worked with or has employed consultants on several assignments.

The major task of the Unit in the first six months of 1990 was planning and preparation of a Computer and Information Systems Strategic Plan.

User and systems specifications for the proposed Project Recording System (PRS) were prepared. This system will become the central component of the new Management Information System, and for the first time will provide senior managers with staff, financial and performance indicators relating to fields of work and major industries.

The Unit conducted a survey and prepared a register of the Department's microcomputers, computer usage, and mini and micro software.

FREEDOM OF INFORMATION

The Freedom of Information Unit co-ordinated Departmental responses to 15 applications. It also undertook the required publication of "Summary of Affairs and Statement of Affairs" documents to identify each policy document held by NSW Agriculture and Fisheries and each of the related organisations for which the department acts as an agency. Due to the size of the resultant documents they are published separately to the Annual Report, but may be obtained from the FOI unit within the Department.

FINANCIAL REPORTS

This section contains the following Financial Reports for 1989–90:

Financial Management
Commercialisation
Major Assets
Disposal of Assets
Capital Works
Consultants
Financial Statements of Consolidated Funds and Special Deposit Accounts
Sources of Non-Consolidated Revenue
Farrer Memorial Trust
Agricultural Scientific Collections Trust Annual Report

FINANCIAL MANAGEMENT

The Departmnent has a decentralised management environment with an extremely diverse range of functions, operating in a climate of increasing demands and decreasing resources. During 1989–90, a policy of more timely and comprehensive accounting practices was adopted to ensure that monitoring was both along commercial lines and performed at the local level.

This policy has resulted in consolidation of the Computerised Accounting System (CAS) and considerable training for users.

Additionally, the year saw two new modules of CAS tested for Accounts Receivable and Asset Management purposes with implementation planned for 1990–91. These will complement the impending move to full accrual accounting over the next five years.

A significant number of accounting functions and associated personnel have been transferred to Orange in conjunction with the progressive implementation of the total move of Head Office by December 1991.

On July 1 1989, the New South Wales Treasury introduced a Managed Fund approach to Insurance across the State. The Department is now responsible for managing its own risks and has created a steering committee and working party to address these issues. All risks associated with the Department's activities are now covered under this fund, either by formal insurance or retained risk. An increased emphasis will be placed on the management and reduction of risk across the Department.

COMMERCIALISATION

TECHNOLOGY TRANSFER

New commercial agreements were put into place with Sandoz Agro Pty Ltd for the development and marketing of mycoherbicides against Bathurst and other burrs. A spray controller is being commercialised by New England Technology Pty Ltd. A vaccine against Akabane disease of cattle is being jointly developed with Arthur Webster Pty Ltd. The IRRICOM irrigation controller is being marketed by commercial partner Peter Cornish & Associates. The Flower Company entered into an agreement to commercialise a suite of cut flower varieties suitable for export marketing. New strawberry varieties developed by the department are being marketed by the Victorian Certified Strawberry Runner Growers' Co-operative Ltd. Pacific Seeds Pty Ltd introduced a departmental hybrid corn line into the Egyptian maize breeding program. Two new fresh market tomato cultivars are being seed increased ready for marketing by New World Seeds Pty Ltd.

Negotiations are at an advanced stage for the commercialisation of other innovations, including humidity control in refrigerated containers, to achieve extended storage life; a vaccine for swine erysipelas; a growth supplement and an accelerated composting process for mushrooms; chickpea cultivars; aquaculture using silver perch; expansion of FARM CHEQUE and the further development of Hyfer sheep.

INTELLECTUAL PROPERTY

An integral part of commercialisation is the protection of the Department's Intellectual property rights and a number of Patents and Trade Mark applications were lodged on behalf of the Minister during the year. In particular a certificate of registration for the Trade Mark 'AGVIEW' was obtained and protection sought for the names "AUSFRESH", "AGFACTS" and "FARM Cheque" through the Office of the Minister for Business and Consumer Affairs.

The Legal Branch is represented on the Department's Patents Committee. It is currently monitoring approximately 145 innovations many of which it is expected will result in the preparation of commercial agreements with the private sector. These agreements provide a valuable source of additional funding to the Department and enable commercialisation of the Department's technology.

A number of Licensing agreements for the marketing of new seed cultivars were also completed during the year. These are expected to yield substantial royalties to the Department in years to come.

MAJOR ASSETS

The major assets of the Department, in addition to our dedicated and committed staff, consist of 25 agricultural research stations with laboratory facilities and substantial land holdings and livestock, Metropolitan research facilities at Rydalmere and Cronulla, 2 agricultural colleges, 5 major (and many smaller) fisheries vessels and substantial laboratory, agricultural and computer equipment.

DISPOSAL OF ASSETS

Negotiations commenced with the Property Services Group of the Department of Administrative Services for the disposal of the Agricultural Station, Seven Hills. This property will be vacated by Department staff as soon as leased accommodation in Windsor is ready for occupation.

The Department of Lands attempted to negotiate final settlements of the Bega Dairy Demonstration Farm and the L.P. Dutton Trout Hatchery, Ebor, following the auction in 1988–89. The sale of the Dutton Trout Hatchery lapsed on 2 April 1990, resulting in the forfeiture of the deposit monies. Some legal difficulties were also experienced with the settlement of the Bega Dairy Demonstration Farm.

Auction of the surplus portion of the Graham Park property at Berry was deferred until negotiations between the Department of Lands and the Local Council are satisfactorily resolved.

The Old Inns company (which leased the tourist facilities at the Inland Fisheries Research Station, Narrandera; the Gaden Trout Hatchery, Jindabyne; and the Agricultural Research and Advisory Station, Grafton) was placed in receivership on 19 April 1990. The receivers, Sydney accountants Ernst & Young, are endeavouring to continue to operate the facilities until the matter is resolved.

CAPITAL WORKS

Capital works were allocated $30.784 mil in 1989–90, including $3 million for plant and equipment purchases, roadworks and cottage maintenance. Funds were also provided by the Commonwealth for the purchase of plant and equipment at C. B. Alexander and Murrumbidgee Agricultural Colleges.

Stages I and II of the Elizabeth Macarthur Agricultural Institute were completed, and the complex was officially opened by the Hon. N. F. Greiner, MP, Premier and Treasurer, on 25 April 1990. Construction of Stage III, the clean animal houses, commenced in January 1990, and work is progressing on schedule.

The Elizabeth Macarthur Agricultural Institute laboratories were occupied in February 1990. The construction of this new research institute, to replace Glenfield, cost $34.602 million and is the largest capital works project undertaken by the Department.

Safety and fire hazard renovations were completed at the Biological & Chemical Research Institute, Rydalmere. The final stage was the completion of B Block (the Entomology and Biology wing) at a cost of $2.460 million.

Major works undertaken during the year (figures in parentheses are total costs).

	1989–90 expenditure ($)
Elizabeth Macarthur Agricultural Institute Stages I, II and III (total cost of Stages I, II and III was $34.602 million at June 1990).	6 588 634
Biological & Chemical Research Institute, Rydalmere, safety and fire hazard renovations.	2 460 006
Plant and equipment	2 577 138
Roadworks and cottage maintenance	485 392
Purchase of cottage, Albury	125 000
Purchase of marine craft	186 891
Computer funding	1 745 183

CONSULTANTS

Consultants were contracted when staffing resources were unavailable or where it was considered essential to use people with specific skills or extensive experience in particular areas.

A. DETAILS OF CONSULTANCIES COSTING < $30 000

	$
Freehill, Hollingdale & Page: Legal documentation concerning relocation	143 000
Coopers and Lybrand: Internal Audit Program	134 600
BSR Pacific Consulting Group: Develop computers and Information Strategic Plan	127 500
P. K. Information Systems Pty Ltd: Development and maintenance of Agricultural and Veterinary Chemicals Information Systems (AVCIS)	105 000
SCP Fisheries Consultants Australia Pty Ltd: Review of Fish Marketing in NSW	100 400
Baillieu Knight Frank: Development managers for relocation	67 500
Pioneer Computing: Upgrade fisheries licensing	63 000
Coopers and Lybrand: Advice on relocation tenders	48 000
Price Waterhouse Urwick: Staff attitude survey on relocation	31 400

B. SCHEDULE OF CONSULTANCIES > 30 000

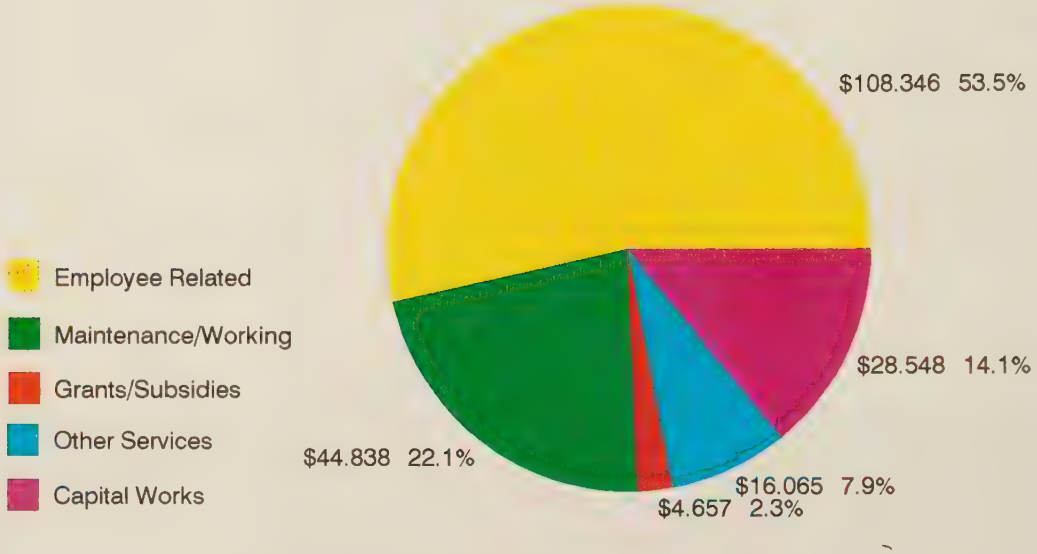
Marketing Board Review: Paid to four individuals ranging from $4 000 to $18 000	37 100
TRAINING	
Media Skills Workshop	27 300
Service Management Development Program	3 800
Business Skills Workshop	4 900
Review of Performance Appraisal System Training Workshop for Staff Appraisal	25 000
Speed Reading Workshop	4 800
Communication Skills Workshop	2 500
Ministerial Correspondence Workshop	1 000
Report Writing Workshop	5 500
Introduction to Management Workshop	7 300
Basic Management Skills Workshop	16 000
Industrial Relations Workshop	11 000
Computerised information system for Veterinary Laboratories	26 000
Business Plan for Animal Genetic and Breeding Unit, Armidale	18 500
Flemington Market Reporting	18 100
Audit of Senior Executive Service Payroll	18 000
Management Conference on relocation	14 800
Upgrading Laboratories, Tamworth	12 700
Financial Management System Training	12 500
Legal advice on development of Agsell Australia Pty Ltd	10 400
Wheat Research Council	10 150
Strategic Planning	10 000
Drainage and Water System, Narrabri ARS	9 000
Design of Ministerial Correspondence recording and tracking system	8 000
Design of soils data base, BCRI	6 000
Egg Board Review	4 700

C. CONTRACTORS 2 650

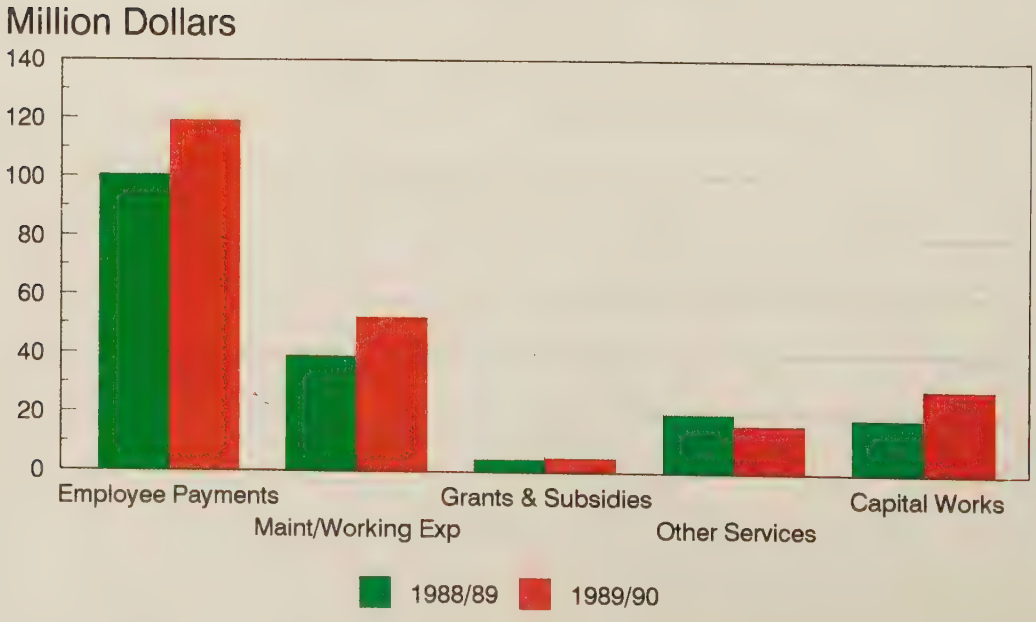
FINANCIAL STATEMENTS OF CONSOLIDATED

Expenditure from all Sources of Funds

Expressed in Million Dollars



Comparison of 1989/90 Expenditure with 1988/89 Total Expenditure



FUNDS AND SPECIAL DEPOSIT ACCOUNTS

STATEMENT BY DIRECTOR–GENERAL

Pursuant to Clause 8 of the Public Finance and Audit (Departments) Regulation 1986, I state that:

a. The accompanying financial statements have been prepared in accordance with the provisions of the Public Finance and Audit Act 1983, the Public Finance and Audit (Departments) Regulation 1986, and the Treasurer's Directions.

b. The statements present fairly the receipts and payments of that part of the Consolidated Fund, and those accounts in the Special Deposits Account operated by the Department.

c. There are no circumstances which would render any particulars included in the financial statements to be misleading or inaccurate.

K. P. SHERIDAN
Director–General

AUDITOR–GENERAL'S CERTIFICATE DEPARTMENT OF AGRICULTURE AND FISHERIES

The accounts of the Department of Agriculture and Fisheries for the year ended 30 June 1990, have been audited in accordance with Section 34 of the Public Finance and Audit Act 1983.

In my opinion, the accompanying summarised receipts and payments statements and statement of Special Deposits Account balances, read in conjunction with the notes thereto, comply with Section 45E of the Act and are in accordance with the accounts and records of the Department.

J. A. PARKINSON, FCPA
Assistant Auditor–General
Sydney, 3 October 1990

NOTES TO FINANCIAL STATEMENTS

Note 1. Accounting Methods and Policies

a. The Financial Statements have been prepared on a Program Budgeting basis. The Department's receipts and payments figures were shown under five program headings in 1988–89, which have been expanded to seven program headings for 1989–90. In those instances where financial details were not dissected into programs, transactions have been included under the "non-program" heading.

b. The financial statements of the Department have been prepared on a cash accounting basis, with the exception of payments for salaries which are reported on an accrual accounting basis.

c. The financial details provided in Tables A, B & D relate to the transactions of both the Consolidated Fund and the Special Deposits Accounts.

d. The financial data has been presented in the following format:

   i. Table A—shows details on a line item basis of all receipts and payments of the Consolidated Fund and Special Deposits Accounts,

   ii. Table B—shows summarised receipts and payments details of the Consolidated Fund and Special Deposits Accounts on a program basis;

   iii. Table C—shows balances of Special Deposits Accounts as at 30 June 1990;

   iv. Table D—shows a broad heading details of receipts and payments of the Consolidated Fund and Special Deposits Accounts dissected on a program basis.

e. A reference in the receipts and payments statements to an "estimate" figure means, in the case of an annual appropriation the amount appropriated in the relevant Appropriation Act as advised by the Treasury.

f. A reference in the receipts and payments statement to an "actual" figure means the payments actually made by the Department in respect of the item to which it refers with the exception of the payment for salaries which are reported on an accrual basis as per (b) above.

g. Estimates for Special Deposits Accounts receipts are not prepared by the Department and not shown within the financial statements.

h. Special Deposits Account expenditures have been recorded on a line item basis, and are included with Consolidated Fund Recurrent Payments expenditure items within Table A.

Note 2. Transfer of Consolidated Fund Grants to Special Deposits Accounts

An amount of $449 000 ($442 156—1988–89) representing Consolidated Fund Grants was transferred from the Consolidated Fund Recurrent Payments account to the Special Deposits Account. These Receipts are not included in the Special Deposits Accounts Grants items and total Departmental payments have been reduced by these transfers. An amount of $2 549 710 ($2 081 884 in 1988–89) representing receipts on Special Deposits Accounts was transferred to the Consolidated Fund. The treatment of these inter-fund transfers ensures that only net program receipts and net program payments are disclosed.

Note 3. Amounts due and unpaid for goods and services received

	1988–89	1989–90
Total value	$924 026	$719 024

The amount shown is an estimate calculated on the basis of actual unpaid vouchers on hand as at 30 June, 1990.

Note 4. Outstanding Commitments as at 30 June, 1990

	1988–89 $'000	1989–90 $'000
Capital Works and Services (Contractual Commitments)*	9 578	1 930
Goods and Services	1 157	1 200
Lease/Hire	NIL	NIL
	10 735	3 130
* Elizabeth Macarthur Agricultural Institute, Camden Park	7 530	1 780
Biological and Chemical Research Institute-fire hazard reduction	2 045	150
Relocation of Tick Laboratories retention sum	3	NIL

Note 5. Schedule of Repayable Amounts owing on Public Borrowings and other repayable advances

There are no Public Borrowings or other repayable advances.

Note 6. Contingent Amount Payable to the Department

Meat Inspection Fees of $3 474 155 of 30 June 1990 have been outstanding for many years. Legal opinion has confirmed that the probability of successful recovery at law would be very low and current recovery actions have been discontinued.

Note 7. Schedule of Debts Written Off —Year Ended 30 June, 1990

The following is a list of debts written off during the year ended 30th June, 1990.

Description	1988–89 $	1989–90 $
Oyster Lease Rental	651	NIL
Artificial Stock Breeding Fees	333	28
Seed Testing	168	9
Overpayment of Salary	1 985	407
Prickly Pear Destruction Commission	2 734	NIL
Fleece Measurement Services	1 696	NIL
Unpaid Student Fees	506	NIL
Emergency Tail Tag Fees	32	NIL
Plant Diseases Act Fees	30	1 500
Publications	54	19
Inland Angling Licences	168	1 640
Board of Tick Control Services	4	1
Telephone & Service Charges	857	NIL
Herd Improvement Fees	143	506
Laboratory Tests	-	10
Overpayment—Drought Fodder Subsidy	-	2 559
	9 361	6 679

Note 8. Salaries and Wages Expenditure

Salaries expenditure shown for both 1988–89 and 1989–90 funded from the Consolidated Fund includes the full years cost. An amount of $2 056 675 ($1 866 708 1988–89) was transferred to Special Deposits Account 1140 representing 6/10 of the salary cost of the pay period commencing 22 June 1990. The net movement in transfers is reflected in the financial statements.

Note 9. Capital Works and Services

Details of expenditure on Capital Works and Services are listed on Table A4.

Note 10. Schedule of Uncollected Amounts as at 30 June, 1990

Schedule A details all uncollected amounts as at 30 June, 1990 totalling $543 420 ($693 245 30-6-89). Appropriate action is currently being undertaken to ensure full recovery of all debts.

Note 11. Audit Fees

The fees for auditing the NSW Agriculture and Fisheries for the year ended 30 June, 1990 was $105 000 ($95 000—1988–89). The Auditor received no other benefits.

Note 12. Other Services

It is estimated that the cost of Other Services provided and not met from the Department's Budget Allocation, totalled $301 000 in 1989–90. Details are as follows:

	1988–89 $'000	1989–90 $'000
Rent (Based on Rental Accommodation as supplied by D.A.S. Office Accommodation Bureau)	1 073	NIL
Repairs, Maintenance and Renewals, Public Buildings Fitouts, etc. (Based on figures determined by Public Works Department)	472	301
TOTAL	1 545	301

In addition, the State Crown Solicitor's Office has assisted on legal matters.

Note 13. Receipts—Consolidated Fund

Revenue banked by the Department into the Consolidated Fund totalled $15 696 000 ($18 062 000—1988–89). This was dissected as follows:

	1988–89	1989–90
a. Receipts for Services Rendered	$6 574 000	$3 988 000

Various fees received from registration and licence renewals for the various Statutes administered by the Department. Revenue from student fees at Departmental Agricultural Colleges and from rental of Departmental Cottages.

b. Commonwealth Contributions	$7 232 000	$7 322 000

These represent contributions by the Commonwealth Government for work carried out by this Department on their behalf under the provisions of Commonwealth Legislation:

Plant Quarantine Services	$3 607 000	$4 232 000
Commerce (Trade Descriptions) Act	$1 577 000	$1 357 000
Animal Quarantine Services	$989 000	$1 057 000
Commonwealth Fisheries	$801 000	$432 000
Animal Export Services	$230 000	$164 000
Ground Water Control	$28 000	$80 000
c. Miscellaneous Receipts	$740 000	$2 138 000
d. Other Receipts	$3 516 000	$2 247 000

Include Sales of Farm Produce, Sale of Publications, Sale of Government Property.

Note 14. Special Deposit Account Balances held and inactive for more than 2 years

Account Description	Amount	Particulars
Don Irec Salary Expenses	$1 024.67	Action is being taken to clear these accounts
Survey Power Site Mt Piper	$1 517.80	" " "
Animal Quarantine Capital Items	$15 877.65	" " "
Irrigation Efficiency Murray Basin	$(2 843.82)	" " "
APIRF Improve Apple Quality	$(74.25)	" " "
Energy Conservation Tillage Operations	$495.09	" " "
RCDF Crop Disease Management	$(345.81)	" " "
Econ Model Cattle Industry	$108.13	" " "
FIRC Mariculture Nutrition	$(32 493.46)	" " "
FIRC Fish Pricing in NSW	$(31 942.72)	" " "
Mur 42 Pesticides Use	$(9.21)	" " "
Soil Conservation Display Material	$1 248.00	" " "
Training Agric. Quarantine Service	$(198.53)	" " "
Mur 52 Sipragcrop Workshop	$115.81	" " "
Fert Strat Fruit Quality	$1 158.79	" " "
Wool Sampling Trangie	$(3 179.60)	" " "
Commonwealth/State Trade Promotion	$(12 209.62)	" " "
CSRG 86/87 Det Citrus Virus	$4 001.89	" " "
Overseas Visit Dr Nikandrow	$(2 449.56)	" " "
Sheep Wool Refresher Course	$(593.91)	" " "
Accum. Funds Orange	$2 018.69	" " "
Noxious Plants Conference	$(31.21)	" " "
SCA R4 Beef-N-Omics	$103.50	" " "
SCA Symposium Mite Control	$273.73	" " "
YES Oct 87 H.O. Admin	$(40.50)	" " "
Exotic Diseases Training	$1 624.41	" " "
Pesticides Seminars	$1 020.90	" " "
Fungicide Resist. Testing	$18.01	" " "

Note 15. Liability for Recreation and Extended Leave

The Department's liability for accrued leave entitlements as at 30 June, 1990 was estimated at $10 119 000 ($9 917 000 in 1988–89) for recreation leave for all employees and $33 065 000 ($26 389 000 in 1988–89) for extended leave in respect of 1 766 (1 510 in 1988–89) employees.

Note 16. Accrued Leave Entitlements

The figure appearing as Salaries and Other Payments includes an amount of $1 884 319 ($1 641 307 in 1988–89) which was transferred from Consolidated Fund to a Special Deposits Account titled "Provision for the Payment of Leave on Termination of Employment". The amount transferred has been calculated on the basis of 2.2% (1.95% in 1988–89) of Consolidated Fund expenditure on salaries, wages and allowances. This Special Deposits Account is purely a Treasury Account and as such payments into and from it are not reflected in Tables A and B, nor does a balance for the account appear in Table C. Actual payments in respect of leave on termination are not reflected in these accounts.

Note 17. Supplementation of Funds and Transfer of Funds

Schedule B details all supplementation of funds, and transfers of funds between Programs, approved by the Treasury during the financial year.

Note 18. Significant variations between Current and Previous Year Receipts and Payments Actuals

Schedule C details significant variations between Current and Previous Year Receipts and Payments Actuals.

Note 19. Significant variations between Appropriation and Estimates, and Actual Results

Schedule D details significant variations detected between Appropriation and Estimates, and Actual Results.

Note 20. Reconciliation of Special Deposit Account Figures Appearing in Table B with Balances as per Table C

	$'000	$'000
Total of Special Deposit Account balances as at 1 July 1989 as per Table C	22 319	18 082
Add: Receipts as per Table B	24 183	
Inter-Fund Transfers as per Table B	2 550	19 769
		37 851
Less: Payments as per Table B	19 417	
Inter-Fund Transfers as per Table B	449	18 968
Less: Balance not carried forward on Treasury Account No. 1966—Unclaimed Monies		1
Add: Departmental Expenditure against Treasury Account No. 1449—Treasury Fire Risks		1
Total of Special Deposit Account Balances as at 30 June 1990 as per Table C		18 883

Note 21. Swine Compensation Fund

In 1988–89 the Acting Premier and Treasurer approved closure of the Swine Compensation Fund in view of its history of negligible compensation payments. An unexpended balance of $1.9 m was transferred to Consolidated Fund to offset any future costs. No funds remained in the account at 30 June 1990.

SCHEDULE A

SCHEDULE OF UNCOLLECTED AMOUNTS AS AT 30 JUNE 1990

Classification	Current $	30–60 days $	60–90 days $	90 days and over $	Total $
Fleece Measurement Service	9 388	2 075	270		11 733
Herd Recording Fees	888	474	196		1 558
Laboratory Tests	137 144	35 358	12 111	35 218	219 831
Miscellaneous Fees		13 950	5 362		19 312
Pasture Seed Levy	156	122	387	824	1 489
Recoupment of Expenses	6 815	50 166	8 924	4 586	70 491
Recoupment of Salary Costs for Officers on Loan				16 947	16 947
Recovery of Bond Liability				23 795	23 795
Recovery of Employer's Liability for Superannuation				1 038	1 038
Recovery of Salary Overpayments				11 714	11 714
Rent	130	130			260
Sale of Farm Produce	15 129	9 838	273	8 626	33 866
Sale of Oyster Spat				65 647	65 647
Sale of Publications	356	3 832	1 455	1 090	6 733
Seed Certification	35	1 215	1 150	4 641	7 041
Student/Short Course Fees	2 828	4 296	18 018	25 999	51 141
Tail Tags	10	2	78	734	824
TOTAL	172 879	121 458	48 224	200 859	543 420
Per cent of Total	31.8	22.4	8.8	37.0	100

SCHEDULE B

SUPPLEMENTATION AND TRANSFER OF FUNDS APPROVED BY THE TREASURY

Plant Industries Program	
Salaries and Other Employee Payments:	
Total Salaries and Other Employee Payments	$65 000
Maintenance and Working Expenses:	
Total Maintenance and Working Expenses	$40 000
Grants and Subsidies:	
Salt Action Funding	$160 000
Capital works and Services Plant and Equipment	$97 000
	$362 000
Animal Production Services	
Other Services:	
Beekeeper Compensation	$5 000
Egg Industry (R & D) Act	$11 251 000
	$11 256 000
Animal Health Services	
Other Services:	
National Registry of Domestic Animal Pathology	$11 000
Eradication of noxious insects and Animal Pests on Unoccupied Crown Lands	$10 000
	$21 000
Support Services	
Grants and Subsidies:	
Pastures Protection Board—Grants	$74 000

SCHEDULE C

SUMMARY OF SIGNIFICANT VARIATIONS BETWEEN CURRENT AND PREVIOUS YEARS-RECEIPTS AND PAYMENTS ACTUALS

Recurrent Receipts

Total Receipts for 1989–90 of $35 465 000 were $1 091 000 higher than for 1988–89 which were $34 374 000.

Significant variations are detailed below:

Commonwealth Contributions

There was an increase in these receipts of some $623 000 due mainly to increased funding for the Plant Quarantine Service to meet increased needs for inspections and the increased funding for Overseas Projects with the commencement of new projects in South East Asia.

Grants and Subsidies

a. The increase in Industry/Private Bodies funding of $2 138 000 was due to the Department seeking more assistance from this area as part of its 1989–90 Strategic Plan. It is anticipated that funding from this source will increase over the next two years because of the Department's thrust in this area.

b. During 1989–90 the Department received its Computer Funding allocation as part of its Consolidated Fund Capital Expenditure appropriation. Therefore, no receipts have been shown for this item due to the changed nature of funding. In 1988–89 funds were credited to a Special Deposit Account and these funds were shown in the Table A statement for receipts.

c. Public Authorities

Funding has increased from this source due to environmental studies being undertaken by the Department for local government Authorities and Other Semi-Government Agencies (e.g. Water Board). It is anticipated that these receipts remain at this level for some time.

Other Reductions

a. Sales of Plant and Equipment are lower than 1988–89 by $326 000 due to the unusual revenue received in 1988–89 for the sale of Government Property. Some $500 000 was received for this area in 1988–89 because of the sale of some Departmental cottages and land whilst in 1989–90 no such sales were made.

b. The recovery of employee expenses and on-costs is lower than the 1988–89 revenue by $618 000 because most secondments of Departmental Officers occurred for Overseas Projects which are funded by Special Deposit Account Grants and all costs are directly recorded against these projects.

c. Interest on investments is higher than 1988–89 because of a higher capital amount being invested from the Cattle Compensation Fund and extra interest being received for the Swine Compensation Fund prior to its closure.

Recurrent Expenditure

Employee Related Payments

a. Employers Contribution to Superannuation has increased by $11.052 million because the Department is now required to pay its full liability to superannuation funds and record this in its accounts. This is the first year of treatment in this fashion.

Maintenance and Working Expenses

a. The expenditure on Rent during 1989–90 was $5 034 000 higher than the previous year due to the inclusion of the payment for Multi-Occupancy Government Building rental. The inclusion of this item is part of the Governments implementation of Service-Wide payment accounting. These payments have become a permanent part of the Department's accounting.

b. The increase of $3 844 000 in Motor Vehicle Running costs is due to the payment of a full years lease fee for the fleet and also the payment of two annual premiums to the Roads and Traffic Authority for 3rd Party Insurance because of a change in their processing. In addition, a small increase was also due to the change in insurance arrangements with the use of the Treasury Managed Fund.

c. The main reason the increase in Fees for Services was that with high turnover of Staff, a number of contract staff were used temporarily to cover vacancies. A full years cost was also recorded for Contract Internal Audit. The Minister conducted a number of reviews using Consultants.

Plant and Equipment

From 1 July 1989 all Plant and Equipment expenditure was accounted for under the Capital Works and Services heading. Therefore, no expenditure is shown here.

Grants and Subsidies

a. Expenditure of $22 000 was approved by Treasury during the year for grants to be made under the Salt Action program initiated during 1989–90.

b. The increase of $63 000 in the Pasture Protection Board item was due to more Veterinary Inspectors at P Boards going on extended leave than previously and the Department having to pay for this leave.

Other Services

a. No expenditure was recorded in the Department's Books for the following items as they were transferred to another agency:
   Payment for Rural Adjustment (State)
   Payment for Rural Adjustment (Commonwealth)

b. The following items have been discontinued:
   Meat Industry Authority—Assistance
   Green Snail Eradication
   because of the finalisation of the short term assistance to these projects.

c. No expenditure was recorded against the item Repairs to Roads because this item is now accounted for under Capital Works and Services.

SCHEDULE D

SIGNIFICANT VARIATIONS BETWEEN APPROPRIATION AND ESTIMATES, AND ACTUAL RESULTS

(This schedule does not form part of the accounts subject to audit)

Recurrent Payments

1. Salaries and Other Employee Payments

Salaries, Wages and Allowances was below budget because of high turnover of staff during the year and the use of salaries funds to cover expenditure in other areas for floods contract employment and high priority initiatives by the Minister and Director-General.

2. Maintenance and Working Expenses

a. Motor Vehicle Running Costs, hire etc.
Estimate $6.445m Actual $7.672m. This was due to the payment of an additional premium for 3rd Party Insurance and a greater than expected level of lease fees and change-over costs.

3. Grants and Subsidies

a. Pastures Protection Boards
Estimate $30 000 Actual $102 000—Refer to Schedule C for explanation.

b. Maintenance and Relocation of Travelling Stock Routes:
Estimate $100 000 Actual $19 000. This is a provision estimate with expenditure arising as relocations are required.

c. Meshing of Sharks
Estimate $380 000 Actual $266 000. The estimate was not changed to meet the shortened meshing season from August to May, to September to April.

d. Egg Industry (R & D) Act 1989
Estimate $0 Actual $11 251 000. This item was approved by Treasury during the year to provide funding for the sale and closure of the Egg Corporation. This amount represents a payment made to the Egg Corporation by the State to cover these activities.

TABLE A1. Summarised receipts and payments statement of the Consolidated Fund and the Special Deposits Accounts by item for the year ended 30 June 1990.

Details	Notes	1988–89 Actual $'000	1989–90 Estimate $'000	1989–90 Actual $'000
RECEIPTS				
Receipts for Services Rendered				
Registration and Licence Fees		2 439	0	2 413
Fees for Services Rendered		4 628	0	4 553
Accommodation and Student Fees		694	0	850
	13(a)	7 761	0	7 816
Commonwealth Contributions				
Animal Quarantine Services		989	0	1 057
Animal Export Services		230	0	163
Commerce (Trade Descriptions) Act Services		1 577	0	1 357
Plant Quarantine Services		3 665	0	4 232
Commonwealth Fisheries Services		801	0	432
Overseas Projects		135	0	671
Employment Programs		355	0	237
Ground Water Control Project		28	0	80
Research Grants		503	0	677
	13(b)	8 283	0	8 906
Grants and Subsidies				
Grants—Industry/Private Bodies		8 070	0	10 208
Grants—Public Authorities		291	0	1 083
Grants—Computer Funding		2 453	0	0
Grants—Other State Governments		92	0	131
Grants—Employment Schemes		724	0	734
		11 630	0	12 156
Other Receipts				
Sales of Plant and Equipment		596	0	270
Sales of Farm Produce		2 110	0	2 358
Sales of Publications		232	0	264
Levies(Noxious Insects Destruction Account)		1 310	0	1 681
Recovery of Employee Expenses and On-costs		873	0	255
Interest on Investments		860	0	1 293
Miscellaneous Receipts		421	0	276
		6 402	0	6 397
Sub-total Receipts		34 076	0	35 275
Balance of Salaries—Net	8	298	0	190
TOTAL—RECEIPTS	18	**34 374**	**10 857**	**35 465**

TABLE A2. Summarised receipts and payments statement of the Consolidated Fund and the Special Deposits Accounts by item for the year ended 30 June 1990.

Details	Notes	1988–89 Actual $'000	1989–90 Estimate $'000	1989–90 Actual $'000
PAYMENTS				
Employee related payments				
Salaries, Wages and Allowances	8	89 557	95 407	92 287
Payments for Leave on Retirement, Resignation, etc.	16	1 642	1 852	1 905
Overtime		1 042	1 262	1 131
Workers Compensation Insurance		1 482	1 916	1 754
Meal Allowances		34	68	60
Payroll Tax		4 928	6 687	6 156
Employers Contribution to Superannuation Schemes	18	1 468	12 736	12 520
Fringe Benefits Tax		302	331	305
TOTAL SALARIES AND EMPLOYEE RELATED PAYMENTS		100 455	120 259	116 118
Maintenance and Working Expenses				
Expenses in Connection with Buildings				
Rent	18	1 344	5 898	6 378
Payment of Rates, Charges etc		339	331	331
Cleaning		1 734	1 629	1 699
Maintenance, Alterations, Additions and Renewals	12	2 250	1 855	2 076
Subsistence and Transport Expenses				
Travelling, Removal and Subsistence Expenses		4 557	5 448	5 272
Motor Vehicles—Running Costs, Maintenance, Hire and Insurance	18	3 828	6 445	7 672
Marine Craft—Running Costs		571	536	485
Freight, Cartage and Packing		258	262	255
General Expenses				
Advertising and Publicity		192	192	254
Books, Periodicals and Papers		432	427	475
Postal and Telephone Expenses		3 307	3 707	3 844
Fees for Services Rendered	18	4 815	6 397	5 968
Stores, Provisions, Furniture, Equipment, Minor Plant etc (including Maintenance and Repairs)		11 403	12 519	12 482
Printing and Stationery		1 218	1 869	1 623
Gas and Electricity		2 520	2 554	2 420
Laundry Expenses		19	54	25
Other Insurances		28	262	814
Minor Expenses(not elsewhere included)		42	21	13
Out of Pocket Expenses		4	12	11
TOTAL MAINTENANCE AND WORKING EXPENSES		**38 861**	**50 418**	**52 097**

TABLE A3. Summarised receipts and payments statement of the Consolidated Fund and the Special Deposits Accounts by item for the year ended 30 June 1990.

Details	Notes	1988–89 Actual $'000	1989–90 Estimate $'000	1989–90 Actual $'000
PAYMENTS (continued)				
Plant and Equipment				
Purchase of Motor Vehicles		232	0	0
Major Plant and Equipment		1 876	0	0
Purchase of Marine Craft		197	0	0
Purchase of Equipment For Fisheries Inspectors		59	0	0
Purchase of Livestock		574	0	0
Purchase of Computers and Related Payments		1 864	0	0
TOTAL PLANT AND EQUIPMENT	18	4 802	0	0
Grants and Subsidies				
Destruction of Noxious Weeds—Grant to Local Government Bodies		3 500	4 250	4 250
Salt Action—Grants	18	0	0	22
Wild Dog Destruction Board		51	60	49
State Agricultural Bureau and Branches		1	2	1
Royal Agricultural Society		50	50	50
Australian Journal of Experimental Agriculture and Animal Husbandry		29	32	32
Agricultural Societies Council N.S.W.		1	2	2
C.B.Alexander Foundation		5	5	5
C.B.A. International		33	35	26
Tobacco Research		5	5	5
Pastures Protection Boards	18	39	30	102
Rural Counsellors—Contribution		121	120	113
TOTAL GRANTS AND SUBSIDIES		3 835	4 591	4 657
Other Services				
Virus Tested Fruits Repositories		23	27	20
Commodity Treatment of Fresh Fruit		31	27	17
Food Preserving Problems		101	101	101
Fruit Fly Suppression		40	40	40
Plant Quarantine Publicity		24	39	21
Green Snail Eradication	18	11	0	0
Agricultural Scientific Collections Trust		15	15	15
Eradication of Potato Cyst Nematode		3	4	4
Noxious Plants Advisory Committee		27	28	27
Control of Legume Inoculants		17	18	18
Beekeepers Compensation		30	25	30
Chicken Meat Industry Committee		15	19	2
Agricultural Colleges—State Grants		0	130	86
Eradication of Noxious Insects and Animal Pests on Unoccupied Crown Lands		20	19	28
Maintenance and Relocation of Travelling Stock Routes	19	30	100	19
National Registry of Domestic Animals		0	0	11
Cattle Tick Compensation		0	1	0
Fencing and Other Facilities		220	220	220
Cattle Tick Research		60	60	60

TABLE A4. Summarised receipts and payments statement of the Consolidated Fund and the Special Deposits Accounts by item for the year ended 30 June 1990.

Details	Notes	1988–89 Actual $'000	1989–90 Estimate $'000	1989–90 Actual $'000
PAYMENTS (continued)				
NSW Recreational Fishing Advisory Council—Expenses		9	12	12
Meshing of Sharks	19	261	380	266
Purchase of Oyster Lease Signs		10	17	17
Contribution to Danish Seine Research		81	81	81
Overseas Visits		45	35	6
NSW Institute of Rural Studies		6	6	4
Repairs to Roads		25	0	0
Egg Industry (R&D) Act 1989	19	0	0	11 251
Tocal Homestead Maintenance		27	27	27
Management of Australian Biblography of Agriculture		17	17	17
Visiting Agricultural Specialists' Expenses		8	12	4
Meat Industry Authority—Assistance	18	250	0	0
Payments for Rural Adjustment (State)	18	2 344	0	0
Payments for Rural Adjustment (Commonwealth)	18	14 892	0	0
Hen Quota Committe Expenses		0	3 851	3 541
Adjustment Assistance to NSW Sugar Industry		928	235	120
Inter-Fund Transfers	2	(143)	(141)	(131)
TOTAL OTHER SERVICES		19 427	5 405	15 934
Payments—Other				
Administration Charges		61	0	172
Repairs to Fire Damaged Premises		10	0	1
Investments		49	0	0
Compensation Payments		280	0	398
Payments to Commonwealth for Licences		88	0	51
Payments to Commonwealth for Boat Levies		376	0	285
Repayable Advance Working Capital		(5)	0	0
Refund of CFAC Levies		0	0	155
TOTAL PAYMENTS—OTHER		859	0	1 062
TOTAL RECURRENT PAYMENTS		168 239	180 673	189 868
Capital Works and Services				
Biological & Chemical Research Institute - Safety Renovations		566	2 460	2 460
Purchase of Computers and Related Payments		0	0	1 745
Tocal Dairy		0	215	0
Elizabeth Macarthur Institute—Camden Park		14 569	7 870	6 589
Relocation of Board of Tick Control Laboratories		246	3	2
Oyster Hatchery—Port Stephens		57	0	0
Construction Of Off-Shore Patrol Vessel		201	0	0
BWFCRS Port Stephens—Water Pumping Facility Upgrade		87	0	0
C.B. Alexander Agricultural College—Extensions		213	0	0
Compensation to Egg Producers		0	14 221	13 901
Commonwealth Special Equipment Grant		321	470	323
Acquisition of Plant and Equipment, and Maintenance of Roads and Cottages		2 200	3 606	6 534
TOTAL CAPITAL WORKS AND SERVICES		18 460	28 845	31 554
TOTAL PAYMENTS		**186 699**	**209 518**	**221 422**
EXCESS OF PAYMENTS OVER RECEIPTS		**152 325**	**198 661**	**185 957**

TABLE B1. Summarised receipts and payments statement of the Consolidated Fund and the Special Deposits Accounts by program for the year ended 30 June 1990.

Details	Notes	RECEIPTS 1988–89 Actual $'000	RECEIPTS 1989–90 Estimate $'000	RECEIPTS 1989–90 Actual $'000	Notes	PAYMENTS 1988–89 Actual $'000	PAYMENTS 1989–90 Estimate $'000	PAYMENTS 1989–90 Actual $'000
Plant Industries Program								
Consolidated Fund		6 902	6 111	6 566	17	52 189	64 064	61 243
Special Deposits Accounts		4 440	0	6 145		6 026	4 345	7 984
Gross Total		11 342	6 111	12 711		58 215	68 409	69 227
Less Inter-fund Transfers		17	0	60		310	60	347
NET TOTAL		11 325	6 111	12 651		57 905	68 349	68 880
Animal Production Services Program								
Consolidated Fund		3 276	614	3 525	17	16 699	37 830	46 579
Special Deposits Accounts		5 911	0	10 066		2 361	5 302	3 932
Gross Total		9 187	614	13 591		19 060	43 132	50 511
Less Inter-fund Transfers		787	0	2 455		23	0	20
NET TOTAL		8 400	614	11 136		19 037	43 132	50 491
Animal Health Services Program								
Consolidated Fund		3 517	2 151	2 207	17	40 588	39 270	36 850
Special Deposits Accounts		1 843	0	2 683		1 422	1 284	2 223
Gross Total		5 360	2 151	4 890		42 010	40 554	39 073
Less Inter-fund Transfers		1 021	0	33		28	0	1
NET TOTAL		4 339	2 151	4 857		41 982	40 554	39 072
Fish Industries Program								
Consolidated Fund		2 234	643	1 605	17	13 160	15 879	15 097
Special Deposits Accounts		1 528	0	2 240		1 862	950	1 971
Gross Total		3 762	643	3 845		15 022	16 829	17 068
Less Inter-fund Transfers		241	0	0		81	81	81
NET TOTAL		3 521	643	3 845		14 941	16 748	16 987
Support Services Program								
Consolidated Fund		1 518	402	1 186	17	32 965	22 886	24 320
Special Deposits Accounts		639	0	1 078		2 822	1 339	1 510
Gross Total		2 157	402	2 264		35 787	24 225	25 830
Less Inter-fund Transfers		16	0	2		0	0	0
NET TOTAL		2 141	402	2 262		35 787	24 225	25 830

TABLE B1. Summarised receipts and payments statement of the Consolidated Fund and the Special Deposits Accounts by program for the year ended 30 June 1990.

Details	Notes	RECEIPTS 1988–89 Actual $'000	RECEIPTS 1989–90 Estimate $'000	RECEIPTS 1989–90 Actual $'000	Notes	PAYMENTS 1988–89 Actual $'000	PAYMENTS 1989–90 Estimate $'000	PAYMENTS 1989–90 Actual $'000
Education Program								
Consolidated Fund		693	936	565	17	5 818	5 818	4 984
Special Deposits Accounts		0	0	799		0	0	744
Gross Total		693	936	1 364		5 818	5 818	5 728
Less Inter-fund Transfers		0	0	0		0	0	0
NET TOTAL		693	936	1 364		5 818	5 818	5 728
Administrative Support Services Program								
Consolidated Fund		0	0	42	17	9 863	11 281	13 381
Special Deposits Accounts		0	0	(8)		2	0	(10)
Gross Total		0	0	34		9 865	11 281	13 371
Less Inter-fund Transfers		0	0	0		0	0	0
NET TOTAL		0	0	34		9 865	11 281	13 371
Non-program receipts and payments								
Consolidated Fund		0	0	0		0	0	0
Special Deposits Accounts		3 955	0	1 180		1 364	0	1 063
Gross Total		3 955	0	1 180		1 364	0	1 063
Less Inter-fund Transfers		0	0	0		0	0	0
NET TOTAL		3 955	0	1 180		1 364	0	1 063
Total receipts and payments								
Consolidated Fund		18 140	10 857	15 696		171 282	197 028	202 454
Special Deposits Accounts		18 316	0	22 319		15 859	13 220	19 417
Gross Total		36 456	10 857	38 015		187 141	210 248	221 871
Less Inter-fund Transfers		2 082	0	2 550	2	442	141	449
NET TOTAL		**34 374**	**10 857**	**35 465**		**186 699**	**210 107**	**221 422**

TABLE C. Statement of Special Deposit Account balances as at 30 June 1990.

1988–89 Cash $'000	1988–89 Securities $'000	1988–89 Total $'000	Account Title	1989–90 Cash $'000	1989–90 Securities $'000	1989–90 Total $'000
			Treasury Account No.0642			
4 259	49	4 308	Department of Agriculture Sundry Deposits Account	5 207	5	5 212
			Treasury Account No.0710			
86	0	86	Australian Extension Services Grant	20	0	20
			Treasury Account No.0727			
0	0	0	Commercialisation Account	443	0	443
			Treasury Account No.1053			
589	0	589	Computer Funding Priorities Committee Account	9	0	9
			Treasury Account No.1140			
1 867	0	1 867	Balance of Salaries—Adjustment Suspense Account	2 057	0	2 057
			Treasury Account No.1404			
39	6 600	6 639	Cattle Compensation Fund	183	7 250	7 433
			Treasury Account No.1433			
2 693	0	2 693	Noxious Insects Destruction Account	3 505	0	3 505
			Treasury Account No.1446			
202	1 550	1 752	Swine Compensation Fund	0	0	0
			Treasury Account No.1470			
19	0	19	Agricultural Scientific Collections Trust Account	5	0	5
			Treasury Account No.1749			
128	0	128	Commonwealth Fisheries Act	199	0	199
			Treasury Account No.1820 Provision for Commitments Outstanding on the Consolidated Fund Recurrent Expenditure Account			
0	0	0	as at 30 June	0	0	0
			Treasury Account No.1966			
1	0	1	Unclaimed Moneys Account	0	0	0
9 883	**8 199**	**18 082**		**11 628**	**7 255**	**18 883**

TABLE D. Disclosure of receipts and payments dissections.

Part A. The table below details the program receipts of Consolidated Fund and Special Deposits Accounts.

1988–89 Receipts $'000	Program Description	Receipts for Services Rendered $'000	Commonwealth Contribution $'000	Grants and Subsidies $'000	Other Receipts $'000	Total Receipts $'000
11 325	Plant Industries	763	6 043	5 407	438	12 651
8 400	Animal Production Services	1 785	–31	3 775	3 743	9 272
4 339	Animal Health Services	1 533	1 444	639	1 241	4 857
3 521	Fish Industries	1 534	542	1 398	371	3 845
2 141	Support Services	866	671	219	506	2 262
693	Education	1 320	0	6	38	1 364
0	Administrative Support Services	15	0	(22)	41	34
3 955	Non-program Receipts	0	237	734	209	1 180
34 374		**7 816**	**8 906**	**12 156**	**6 587**	**35 465**

TABLE D. Disclosure of receipts and payments dissections.

Part B. The table below details the program payments of Consolidated Fund and Special Deposits Accounts.

1988–89 Payments $'000	Program Description	Salaries and Other Employee Payments $'000	Maintenance and Working Expenses $'000	Capital Works $'000	Other Payments $'000	Total Payments $'000
57 905	Plant Industries	44 528	14 941	4 899	4 512	68 880
19 037	Animal Production Services	14 534	6 246	14 886	14 825	50 491
41 982	Animal Health Services	22 060	8 900	7 327	785	39 072
14 941	Fish Industries	9 845	5 425	930	787	16 987
35 787	Support Services	12 450	9 811	2 921	648	25 830
5 818	Education	3 290	1 820	527	91	5 728
9 865	Administrative Support Services	8 392	4 947	27	5	13 371
1 364	Non-program Receipts	1 019	7	37	0	1 063
186 699		**116 118**	**52 097**	**31 554**	**21 653**	**221 422**

SOURCES OF NON-CONSOLIDATED REVENUE

The total research and development grants to the Department from non-Consolidated Revenue sources in 1989–90 exceeded $9.2 million, an increase of more than 21 per cent during the year.

Rural industry research and development grants 1989–90

Funding body	*Allocation ($)*
Australian Meat and Livestock Research and Development Corporation	831 362
Australian Special Rural Research Fund	291 258
Australian Water Research Advisory Council	210 000
Barley Research Committee for NSW	219 055
Barley Research Council	121 795
Chicken Meat Research Council	33 230
Cotton Research Council	397 941
Dairy Research Council	117 340
Dried Fruits Research Council	56 458
Egg Industry Research Council	51 476
Fishing Industry Research and Development Council	763 881
Grain Legumes Research Council	177 926
Grape and Wine Research Council	86 209
Honey Research Council	33 851
Horticultural Quarantine Research Grants	26 477
Horticultural Research and Development Corporation	277 800
Horticultural Stock & Nurseries Act Account	84 640
National Irrigation Research Fund	63 500
National Soil Conservation Program	139 217
Oilseeds Research Council	287 598
Pig Research Council	228 514
Rice Research Committee	479 393
Sugar Research Council	14 289
Swine Compensation Fund (NSW)	107 036
Tobacco Trust Account	50 960
Wheat Research Committee for NSW	989 641
Wheat Research Council	975 736
Wool Research and Development Fund	2 088 298
Rural industry research and development funds total	$9 204 881

Miscellaneous grants also came from the Australian Centre for International Agricultural Research, Natural Resources Management Strategy; and donations were made by marketing boards, special interest groups and private companies. Postgraduate Scholarships to the value of $124 317 were also received from the Wool Research and Development Fund, Australian Meat and Livestock Research and Development Corporation and the Oilseeds Research Council.

FARRER MEMORIAL TRUST

Dr Malcolm Campell receives 1989 Farrer Memorial Medal.

FARRER MEMORIAL RESEARCH SCHOLARSHIP FUND

The Farrer Memorial Trust was established in 1911 to perpetuate the memory of William James Farrer and to encourage and inspire agricultural scientists. Initially it awarded scholarships for 'study or research in agricultural problems'. Later it included the delivery of an annual oration and the presentation of the Farrer Memorial Medal to a distinguished agricultural scientist for service rendered in the fields of research, education or administration.

The Director–General of NSW Agriculture & Fisheries, Dr K. P. Sheridan, is the Chairman of the Trust. The other official Trustees are: Mr G. R. Gregory, Deputy Director–General of the Department; Dr L. Burgess, Dean of the Faculty of Agriculture, University of Sydney; and Prof. F. G. Swain, Chief Executive & Deputy Vice–Chancellor, University of Western Sydney, Hawkesbury. The non-official Trustees, representing industry, are: Mr G. McCorquodale, Executive Director, NSW Flour Millers' Council; Mr H. R. M. Ross, 'Glengarry', Springside via Orange; and Mr P. E. B. MacInnes, 'Warringa', Dubbo.

The 1989 Farrer Memorial Medal was awarded to Dr Malcolm Campbell, Principal Research Scientist with NSW Agriculture & Fisheries and was presented at a function held at Tamworth.

Dr Campbell delivered the Farrer Memorial Oration entitled "Extending the frontiers—from Farrer's wheats to Australia's aerially sown pastures".

Mr Geoffrey Hart was awarded the 1988 Farrer Memorial Research Scholarship. Mr Hart continues his research into "The Management of Soil Variability for Optimizing Wheat Production" at the University of Sydney.

AUDITOR–GENERAL'S CERTIFICATE

TRUSTEES OF THE FARRER MEMORIAL RESEARCH SCHOLARSHIP FUND

The accounts of the Trustees of the Farrer Memorial Research Scholarship Fund for the year ended 31 December 1989 have been audited as required by Section 45(1) of the Public Finance and Audit Act 1983 and in accordance with Section 34 of that Act.

In my opinion, the accompanying balance sheet, income and expenditure and funds statements, read in conjunction with the notes thereto, exhibit a true and fair view of the financial position at 31 December 1989 and transactions for the year then ended.

J. A. PARKINSON, FASA CPA
Assistant Auditor–General
of New South Wales

Sydney
2 April 1990

STATEMENT IN ACCORDANCE WITH SECTION 41B(1)(F) OF PUBLIC FINANCE AND AUDIT ACT, 1983.

Pursuant to Regulation 11 of the Public Finance and Audit (Statutory Bodies) Regulation, 1985, we state:

a. the financial statements and notes thereon exhibit a true and fair view of the financial position and transactions for the year ended December 31, 1989;

b. the financial statements have been prepared in accordance with the provisions of the Act, Regulation and the Treasurer's Directions; and

c. we are not aware of any circumstances which would render any particulars included in the financial statements to be misleading or inaccurate.

K. P. SHERIDAN
Chairman,
Farrer Memorial Trust

G. R. GREGORY
Trustee

Sydney
9 February 1990

BALANCE SHEET AS AT 31 DECEMBER, 1989.

1988 $		*1989* $
	CURRENT ASSETS	
46 200	Investments (at cost) (Note 4)	15 000
129	Medal Stocks (at cost)	97
4 738	Accrued Interest	5 281
	Cash at Bank	
1802	Commonwealth Savings Bank	1 059
22 642	Advance Bank Investment Account	19 422
236	Advance Bank Passbook Account	233
75 747	TOTAL CURRENT ASSETS	41 092
	NON-CURRENT ASSETS	
90 500	Investments (at cost) (Note 4)	151 500
90 500	TOTAL NON-CURRENT ASSETS	151 500
166 247	**TOTAL ASSETS**	**192 592**
	CAPITAL & RETAINED EARNINGS	
	CAPITAL	
116 022	Balance as at 1st January 1989	121 022
5 000	Donations Received (Notes 2a & 2b)	14 500
121 022	TOTAL CAPITAL	135 522
	RETAINED EARNINGS	
45 225	Accumulated Funds	57 070
45 225	TOTAL RETAINED EARNINGS	57 070
166 247	**TOTAL CAPITAL & RETAINED EARNINGS**	**192 592**

P. ANQUETIL
Hon. Secretary
Farrer Memorial Trust
9 February, 1990

INCOME AND EXPENDITURE ACCOUNT FOR YEAR ENDED 31 DECEMBER, 1989.

1988 $		*1989* $
	INCOME	
18 009	Interest from Investments	21 021
1 890	Interest from Cash at Bank	937
2 276	Donations (Note 3)	2 283
22 175		24241
	EXPENDITURE	
25 272	Cost of Scholarship	11 477
783	Oration Expenses	868
20	Bank Charges	51
26 075		12 396
(3 900)	Excess of Income over Expenditure	11 845
49 125	Accumulated Funds at 1 January	45 225
45 225	**Accumulated Funds at 31 December**	**57 070**

STATEMENT OF SOURCES AND APPLICATION OF FUNDS FOR THE YEAR ENDED 31 DECEMBER, 1989.

1988 $		*1989* $
	SOURCE OF FUNDS	
	FUNDS FROM OPERATIONS	
	Inflows of Funds from Operations	
19 899	Interest from Investments and Bank Accounts	21 958
2 276	Donations	2 283
22 175		24 241
	Outflows of Funds from Operations	
26 075	Expended in the provision of scholarship and oration expenses and bank charges	12 396
(3 900)		11 845
5 000	Donations Received and Added to Capital Account	14 500
	Reduction in Assets	
	Current Assets	
33	Medal Stocks	32
-	Investments	31 200
1 133		**57 577**
	APPLICATION OF FUNDS	
	Increase in Assets	
	Current Assets	
(416)	Accrued Interest	543
1 549	Cash at Bank	(3 966)
1 133		(3 423)
	Non-Current Assets	
-	Investments	61 000
1 133		**57 577**

NOTES TO AND FORMING PART OF THE ACCOUNTS FOR THE YEAR ENDED 31 DECEMBER, 1989.

1. Summary of Accounting Policies
   a. The accompanying financial statements have been prepared on an accrual basis in accordance with historical cost principles, having regard to current Australian Accounting Standards.
   b. The financial statements have been prepared in accordance with the requirements of Section 41B (1) of the Public Finance and Audit Act, 1983.
   c. Policies adopted are consistent with those applied in the previous year.
   d. All administration costs (including salary and wages) are met directly from the Consolidated Fund allocation to the Minister for Agriculture and Rural Affairs. Such costs are estimated to be $3370 for the year.
   e. Except that no provision is made for the value of accrued long service and annual leave, no material amounts were owed to or by the fund as at 31 December, 1989. Long service leave and Annual leave are paid out of Consolidated Fund Appropriations when such leave is taken. There is no superannuation liability as at 31 December, 1989.

2. Donations received and added to the Capital Account were:

	1989 $	*1988* $
a. Wheat Research Committee of N.S.W.	4 000	4 000
Westpac Banking Corporation	500	–
Manildra Group	1 000	–
Goodman Fielder Wattie Ltd	5 000	–
Commonwealth Development Bank of Australia	1 000	–
Australian Wheat Board	3 000	–
Wheat Research Committee of SA	–	1 000
	14 500	5 000

   b. The conditions relating to the donation of $4000 from the Wheat Research Committee of N.S.W. are such that the donation must be expended in the areas of salaries, operating expenses or capital. As there are no salaries paid by the Trust and operating expenses are met from interest received on the investment of capital then the donation is credited to the Capital Account.

   The Australian Wheat Board is providing sponsorship towards the Farrer Memorial Scholarship for a period of five (5) years at the rate of $3000 per annum.

3. Donations of $2283 included as income were received from other sources to fund scholarship expenses.

4. Investments in Public Authorities and Term deposits are valued at cost and market value and are held to maturity. All investments are quoted on the Sydney Stock Exchange.

1988			*1989*	
Cost Value	*Market Value*		*Cost Value*	*Market Value*
7 200	7 542	Australian Resources Development Bank	-	-
8 000	8 410	Primary Industry Bank of Australia	-	-
31 000	32 399	Commonwealth Development Bank of Australia	76 000	76 657
2 000	1 407	State Bank of N.S.W.	2 000	1 458
88 500	83 230	N.S.W. Treasury Corp.	88 500	88 005
$136 700	**$132 988**		**$166 500**	**$166 120**

INVESTMENTS AS AT 31 DECEMBER, 1989.

INVESTMENT	INTEREST RATE	MATURITY DATE	$	AMOUNT
COMMONWEALTH DEVELOPMENT BANK OF AUSTRALIA LTD				
CDB investment	15.50%	07.07.1992	16 000	
CDB investment	15.25%	03.05.1991	60 000	76 000
STATE BANK OF NEW SOUTH WALES				
Loan No. 10	5.375%	31.10.1993	2 000	2 000
NEW SOUTH WALES TREASURY CORPORATION				
Premier State Bonds	13.50%	01.03.1990	15 000	
Premier State Bonds	15.60%	01.07.1993	3 000	
Premier State Bonds	12.50%	01.11.1991	5 000	
Premier State Bonds	12.25%	01.03.1992	27 500	
Premier State Bonds	12.50%	01.10.1992	33 000	
Premier State Bonds	12.50%	01.10.1992	5 000	88 500
				$166 500

REPORT OF THE AGRICULTURAL SCIENTIFIC COLLECTIONS TRUST FOR THE YEAR ENDED 30 JUNE 1990

This is the fifth Annual Report on the activities of the Agricultural Scientific Collections Trust, established in 1983 under the provisions of the Agricultural Scientific Collections Trust Act, 1983, No. 148, of the NSW Parliament.

Aims and objectives of the Trust

The Act provides statutory protection for the important scientific collections of NSW Agriculture & Fisheries and ensures their long-term maintenance and improvement. At present, the two collections vested in the Trust are the Plant Pathology Branch Herbarium and the Entomology Branch Insect and Mite Collection. The collections are housed at the Biological and Chemical Research Institute (BCRI), Rydalmere. They are used in both research work on the taxonomy and identification of insects, mites, fungi and other microorganisms harmful to plants and in providing day-to-day advice on the identification, host range, geographic distribution etc. of these organisms.

Access

Director
Agricultural Scientific Collections Trust
Biological and Chemical Research Institute
Cnr Victoria Road and Pemberton Street
Rydalmere NSW 2116
Telephone: (02) 683 9777
Fax: (02) 683 9714
Business hours: 8.30 am—4.30 pm.

The present Director of the collections is Mr J. Walker, Principal Research Scientist and Curator, Plant Pathology Branch Herbarium.

Composition of the Trust

Trust members are appointed by the Minister for Agriculture and Rural Affairs for a period of five years. The present composition of the Trust is:

Chairman

Mr G. C. File, Executive Director (Research and Advisory Services), NSW Agriculture & Fisheries.

Director of the Collections

Mr J. Walker, Principal Research Scientist, Curator, Plant Pathology Branch Herbarium, NSW Agriculture & Fisheries.

Secretary

Dr M. Fletcher, Research Scientist, Curator, Entomology Branch Insect and Mite Collection, NSW Agriculture & Fisheries.

Trustees

Mr M. Casimir, Director, Biological and Chemical Research Institute, NSW Agriculture & Fisheries.
Dr Dinah Hales, Associate Professor, School of Biological Sciences, Macquarie University.
Dr P. G. Valder, 55 Darling Point Road, Darling Point, 2027.
Dr M. Fletcher replaces Dr E. Schicha who resigned from the Trust in Feb. 1990.

RESEARCH

Plant Pathology Herbarium. Examination of specimens and preparation of final manuscript for *The Plant Diseases and Plant Pathogens of New South Wales: An Annotated Index* was continued by Mr J. Walker. In addition papers dealing with the first occurrence of the rust *Uromyces minor* on peas in Australia (with L. Wiberg, Tasmania) and on the host range and geographic distribution of *Verticillium albo-atrum* in Australia were accepted for publication. The final draft of a paper dealing with species of *Colletotrichum* on *Xanthium* (with A. Nikandrow) was also completed. Mr M. J. Priest continued his investigation on *Pisolithus* (in co-operation with Dr N. Malajczuk, CSIRO Division of Forest Research) and completed manuscripts on *Cordana* spp. on bananas in Australia and on several leaf parasites of Proteaceae. Papers on the first occurrence of the sexual stage (teleomorph) of the cucurbit powdery mildew *Sphaerotheca fuliginea* in Australia (with Mr D. Letham) and on a first record of *Stigmina millettiae* were published.

Entomology Collections. A joint publication on the Phytoseiid mites of the Philippines by Dr E. Schicha, Senior Research Scientist, and Dr L. A. Corpuz Raros of the Philippines has been accepted for publication by the International Journal of Acarology. Work on mites from Western Australia, and on possible use of beneficial mites to control bunch and blister mites in grapevines in the MIA, Sunraysia and Riverland districts of NSW, Victoria and South Australia (respectively) is in progress.

Research by Dr M. J. Fletcher into the subfamily Typhlocybinae (Hemiptera, Cicadellidae) is producing a computer based generic key which has already made a significant contribution to identification work on specimens collected during quarantine survey work in Northern Australia. Several new species and undescribed genera have been detected. Work reported last year on the Kirkaldy type specimens in the subfamily Deltocephalinae (Hemiptera, Cicadellidae) is nearing completion and will provide an essential taxonomic base for future work on the Australian fauna.

Dr G. R. Brown continued work on the hymenopterous family Tiphiidae and published a paper dealing with Australian species of *Encopothynnus*.

IDENTIFICATION AND ADVISORY WORK

Plant Pathology Herbarium. Over 700 routine identifications were made for clients during the year. In addition, detailed information was supplied on a wide range of plant parasitic fungi of importance in quarantine and trade. Specialist identifications of rust were made for some Australian and overseas workers.

Entomology Collections. Identifications of 783 insect, mite, spider and other invertebrate samples were made on a routine basis. In addition specialist identifications of leaf hoppers, mites and flower wasps were made for Australian and overseas workers.

CURATION OF THE COLLECTIONS

Plant Pathology Herbarium. Over 1100 collections were added to the Herbarium, bringing the total held to over 77 000 specimens. Twenty four specimens were sent on loan. From July 1989 to mid May 1990, 89 cultures were sold, yielding $2225. An Osborne 386/33 microcomputer has been purchased from Trust funds to be used in the computer indexing programme for the National Collections and as a data base for the NSW plant disease list.

Entomology Collections. Due to building renovations, the major part of the Entomology Collections have been inaccessible for the whole year. Some curatorial work has been possible on the spirit and slide collections. An Osborne 386/33 microcomputer has been purchased jointly by the Trust and NSW Agriculture & Fisheries to be the basis for a local area network linking the enquiry officer, urban entomologist and the Taxonomy section, and for taxonomic work.

Evaluation of Biological Control Agents. Nineteen proposals by scientists to the Commonwealth Department of Primary Industries and Energy concerning the testing in quarantine and proposed release of biological control agents were evaluated and reports prepared.

Staff. Dr G. R. Brown, Senior Technical Officer (Scientific) was admitted to the degree of Doctor of Philosophy at the University of New South Wales for his work on Australian Thynninae. Mrs D. Crompton, Clerical Assistant, resigned from the Herbarium after 18 years service.

The Financial Statement and Auditor's report will be submitted when prepared at the end of the financial year.

PUBLICATIONS

Brown, G. R. (1989). The Australian genus *Encopothynnus* Turner (Hymenoptera : Tiphiidae). *Journal of the Australian Entomological Society* **28** : 255–266.

Priest, M. J. (1989). *Stigmina millettiae* on *Kunstleria blackii* in Australia. *Australasian Plant Pathology* **18** : 85.

Letham, D. B. & Priest, M. J. (1989). Occurrence of cleistothecia of *Sphaerotheca fuliginea* on cucurbits in South Australia and New South Wales. *Australasian Plant Pathology* **18** : 35–37.

Walker, J. (1990). Plant diseases and fungi—specimens for identification. *NSW Agriculture & Fisheries* Agfact AB 7, 2nd Ed.

AGRICULTURAL SCIENTIFIC COLLECTIONS TRUST

BALANCE SHEET AS AT 30 JUNE 1990

1988–89 $		NOTES	1989–90 $
	CURRENT ASSESTS		
18 781	Cash at Treasury		5 044
18 781	TOTAL CURRENT ASSETS		5 044
	NON-CURRENT ASSETS		
2 427	Plant and Equipment (less depreciation $1262)	(2.3)	19 514
2 427	TOTAL NON-CURRENT ASSETS		19 514
21 208	TOTAL ASSETS		24 558
0	CURRENT LIABILITIES		0
0	TOTAL LIABILITIES		0
21 208	NET ASSETS		24 558
	CAPITAL AND RETAINED EARNINGS		
21 208	Accumulated Funds		24 558
21 208	**TOTAL CAPITAL AND RETAINED EARNINGS**		24 558

AGRICULTURAL SCIENTIFIC COLLECTIONS TRUST

STATEMENT OF INCOME AND EXPENDITURE FOR THE YEAR ENDED 30 JUNE 1990

1988–89 $		NOTES	1989–90 $
	INCOME		
	Consolidated Fund Appropriation		
	Minister for Agriculture & Rural Affairs-		
15 000	Other Services	(1.2)	15 000
1 875	Sale of Cultures	(3.1)	1 905
16 875			16 905
	EXPENDITURE		
5 554	Miscellaneous Stores		8 752
567	Books		1 297
1 280	Fees for Services Rendered		800
319	Printing		2 247
362	Travel Expenses		0
215	Depreciation	(2.2)	459
8 297			13 555
8 578	Operating Surplus		3 350
12 630	Add: Retained Earnings 1 July		21 208
21 208	**Retained Earnings as at 30 June**		24 558

AGRICULTURAL SCIENTIFIC COLLECTIONS TRUST

STATEMENT OF SOURCES AND APPLICATION OF FUNDS FOR THE YEAR ENDED 30 JUNE 1990

1988–89 $		NOTES	1989–90 $
	SOURCES OF FUNDS		
	FUNDS FROM OPERATIONS:	(1)	
	Inflow of Funds		
15 000	Consolidated Fund appropriation		15 000
1 875	Sale of cultures		1 905
16 875			16 905
8 082	Outflow of Funds		13 096
8 793			3 809
	DECREASE IN ASSETS		
	Current assets		
0	Cash at Treasury		13 737
8 793			17 546
	APPLICATION OF FUNDS		
	Increase in assets:		
	Current assets		
8 793	Cash at Treasury		0
	Non-current assets		
0	Plant and equipment purchases		17 546
8 793			17 546
	(1) Reconciliation of Operating Surplus with Funds from Operations		
8 578	Operating Surplus		3 350
215	Add : Depreciation		459
8 793			3 809

NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS OF THE AGRICULTURAL SCIENTIFIC COLLECTIONS TRUSTS FOR THE YEAR ENDED 30 JUNE 1990

1. GENERAL

1.1 The "Trust" is constituted under Section 5 of the Agricultural Scientific Collections Trust Act 1983 which was proclaimed to commence from 9 November 1984. This Act gives statutory protection to the scientific collections of NSW Agriculture & Fisheries, ensuring their long term maintenance and improvement. At the present time, the only two collections vested in the Trust are the Plant Pathology Branch Herbarium and the Entomology Branch Insect and Mite Collection, both located at the Biological and Chemical Research Institute, Rydalmere.

1.2 The Trust operates from an annual Consolidated Fund appropriation to the Minister for Agriculture and Rural Affairs which is transferred to a Special Deposits account for operating purposes.

1.3 Operations of the Trust are carried out by officers of NSW Agriculture & Fisheries and no salaries, wages or overhead costs are charged to or paid by the Trust. It is not possible to reasonably estimate the value of material expenditure incurred by the Department in direct support of the Trust owing to the number of staff that have some input into the maintenance of the collections and the interrelationship with normal departmental duties.

2. ACCOUNTING METHODS AND POLICIES

2.1 The financial statements for the year ending 30 June 1990 have been prepared on an accrual and historical cost basis in conformity with Australian Accounting Standards and with Section 41B of the Public Finance and Audit Act 1983 to exhibit a true and fair view of the financial position and transactions of the Trust.

2.2 Depreciation of non-current assets has been calculated on the straight line method using appropriate rates, having regard to the estimated useful life of the various assets.

2.3 Plant and Equipment owned by the Trust have been defined in accordance with the Treasurer's Directions, issued from time to time, and takes into consideration the cost and anticipated life of the respective items.

3. CHANGES IN ACCOUNTING POLICY

3.1 There have been no changes in accounting policies adopted since 1987–88. A charge for the sale of living cultures of fungi and bacteria commenced during 1987–88.

4. DEBTS, RECEIVABLES, CONTINGENT LIABILITIES AND AUDIT FEES

4.1 No receivables were owing to the Trust as at 30 June 1990.

4.2 There were no contingent liabilities in respect of the Trust as at 30 June 1990.

4.3 Audit fees totalling $800 were paid in 1989–90.

4.4 The Trust operates from premises provided free of service charges by NSW Agriculture & Fisheries at the Biological and Chemical Research Institute, Rydalmere. Rental charges, if payable, are estimated to be $35 000 per annum.

4.5 There were no outstanding debts owed by the Trust at the end of the year.

4.6 Commitments for outstanding materials, as at 30 June 1990, were nil.

Statement by Members of the Trust

Pursuant to Section 41B(1)(f) of the Public Finance and Audit Act 1983 and in accordance with a resolution of the members of the Agricultural Scientific Collections Trust, we declare on behalf of the Trust that in our opinion:

1. The accompanying financial statements exhibit a true and fair view of the financial position of the Trust as at 30 June 1990 and transactions for the year then ended.
2. The statements have been prepared in accordance with the provisions of the Public Finance and Audit Act 1983, the Public Finance and Audit (Statutory Bodies) Regulation 1985 and the Treasurer's Directions.
3. In the interval between the end of the financial year and the date of these financial statements no item, transaction or event of a material and unusual nature has arisen which is likely, in the opinion of the members of the Trust, to substantially affect the results of the Trust's operations for the next financial year.

J. WALKER
DIRECTOR

Agricultural Scientific
Collections Trust
9th August 1990

DR M. J. FLETCHER
SECRETARY

Agricultural Scientific
Collections Trust
9th August 1990

Auditor–General's Certificate

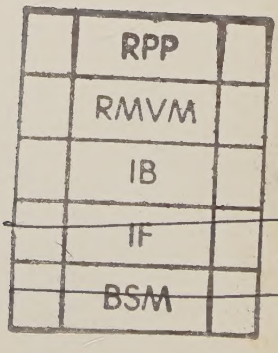
Agricultural Scientific Collections Trust

The accounts of the Agricultural Scientific Collections Trust for the year ended 30 June 1990, have been audited in accordance with Section 34 of the Public Finance and Audit Act 1983.

In my opinion, the accompanying balance sheet, income, expenditure and funds statements, read in conjunction with the notes thereto, comply with Section 41B of the Act and exhibit a true and fair view of the financial position at 30 June 1990 and transactions for the year then ended.

J. A. PARKINSON, FCPA
ASSISTANT AUDITOR–GENERAL

Sydney,
21 September 1990


RPP
RMVM
IB
IF
BSM

NSW Agriculture & Fisheries